Appendices to the Quartz Hill Library Project

Draft Initial Study/Mitigated Negative Declaration

January 2015

Appendix A

Air Quality

Quartz Hill

Los Angeles-Mojave Desert County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Library	12.50	1000sqft	1.25	12,500.00	0
Parking Lot	21.78	1000sqft	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	7			**Operational Year**	2016

Utility Company Los Angeles Department of Water & Power

CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 1.75 acre site per PD. 1.25 for buidling, 0.5 for parking.

Construction Phase - Construction schedule from applicant

Off-road Equipment - Exterior hard and landscape equip 8 hrs/day each piece unless Caleemod default is otherwise

Off-road Equipment - Fixtures - no equipment

Off-road Equipment - Grading equip assumed 8 hrs/day each piece unless Caleemod default is otherwise

Off-road Equipment - Interior Finishes - no equipment

Off-road Equipment - Utilities equip 8 hrs/day each piece unless Caleemod default is otherwise

Off-road Equipment - Rough-in equip 8 hrs/day each piece unless Caleemod default is otherwise. Plaster applicator shown as "other const equip".

Off-road Equipment - Structure equip 8 hrs/day each piece unless Caleemod default is otherwise

Trips and VMT - worker trips assumed each worker = 2 trips/day. All delivery and haul trucks assumed to be HHDT.

Grading - 2500 cy for "onsite" work, haul trucks activity based on applicant numbers

Architectural Coating -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	18980	18000
tblConstructionPhase	NumDays	10.00	151.00
tblConstructionPhase	NumDays	200.00	30.00
tblConstructionPhase	NumDays	200.00	75.00
tblConstructionPhase	NumDays	200.00	36.00
tblConstructionPhase	NumDays	200.00	41.00
tblConstructionPhase	NumDays	4.00	31.00
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	51.00
tblConstructionPhase	PhaseEndDate	7/15/2016	5/22/2016
tblConstructionPhase	PhaseEndDate	8/12/2015	9/25/2015
tblConstructionPhase	PhaseEndDate	1/8/2016	12/17/2015
tblConstructionPhase	PhaseEndDate	7/11/2016	3/26/2016

tblConstructionPhase	PhaseEndDate	10/23/2015	8/12/2015
tblConstructionPhase	PhaseEndDate	8/13/2015	7/1/2015
tblConstructionPhase	PhaseEndDate	9/9/2015	9/10/2015
tblConstructionPhase	PhaseStartDate	12/18/2015	10/25/2015
tblConstructionPhase	PhaseStartDate	7/2/2015	8/13/2015
tblConstructionPhase	PhaseStartDate	9/26/2015	9/4/2015
tblConstructionPhase	PhaseStartDate	5/23/2016	2/8/2016
tblConstructionPhase	PhaseStartDate	9/11/2015	7/1/2015
tblConstructionPhase	PhaseStartDate	8/13/2015	7/1/2015
tblGrading	AcresOfGrading	42.63	1.75
tblGrading	AcresOfGrading	25.50	0.00
tblGrading	MaterialExported	0.00	2,500.00
tblLandUse	LotAcreage	0.29	1.25
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	11.51	11.05
tblTripsAndVMT	HaulingTripNumber	0.00	50.00
tblTripsAndVMT	HaulingTripNumber	313.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	150.00
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	75.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	35.00
tblTripsAndVMT	HaulingVehicleClass		HHDT
tblTripsAndVMT	HaulingVehicleClass		HHDT
tblTripsAndVMT	HaulingVehicleClass		HHDT
tblTripsAndVMT	VendorTripNumber	6.00	0.00
tblTripsAndVMT	VendorTripNumber	6.00	0.00

tblTripsAndVMT	VendorTripNumber	6.00	0.00
tblTripsAndVMT	VendorVehicleClass		HDT_Mix
tblTripsAndVMT	VendorVehicleClass		HDT_Mix
tblTripsAndVMT	VendorVehicleClass		HDT_Mix
tblTripsAndVMT	WorkerTripNumber	10.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	14.00	16.00
tblTripsAndVMT	WorkerTripNumber	14.00	12.00
tblTripsAndVMT	WorkerVehicleClass		LD_Mix
tblTripsAndVMT	WorkerVehicleClass		LD_Mix
tblTripsAndVMT	WorkerVehicleClass		LD_Mix
tblWater	IndoorWaterUseRate	391,111.35	375,466.90
tblWater	OutdoorWaterUseRate	611,738.27	587,268.74

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	5.8806	47.4938	29.8571	0.0444	0.6242	2.6513	3.1877	0.1653	2.4776	2.6204	0.0000	4,353.0856	4,353.0856	1.1007	0.0000	4,376.2011
2016	2.9865	8.0769	8.6303	0.0134	0.6710	0.5818	1.1595	0.1781	0.5353	0.6886	0.0000	1,261.4903	1,261.4903	0.2168	0.0000	1,266.0428
Total	**8.8671**	**55.5707**	**38.4874**	**0.0579**	**1.2952**	**3.2331**	**4.3472**	**0.3434**	**3.0129**	**3.3090**	**0.0000**	**5,614.5758**	**5,614.5758**	**1.3175**	**0.0000**	**5,642.2439**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	5.8806	47.4938	29.8571	0.0444	0.6242	2.6513	3.1877	0.1653	2.4776	2.6204	0.0000	4,353.0856	4,353.0856	1.1007	0.0000	4,376.2011
2016	2.9865	8.0769	8.6303	0.0134	0.6710	0.5818	1.1595	0.1781	0.5353	0.6886	0.0000	1,261.4903	1,261.4903	0.2168	0.0000	1,266.0428
Total	**8.8671**	**55.5707**	**38.4874**	**0.0579**	**1.2952**	**3.2331**	**4.3472**	**0.3434**	**3.0129**	**3.3090**	**0.0000**	**5,614.5758**	**5,614.5758**	**1.3175**	**0.0000**	**5,642.2439**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.8112	3.0000e-005	3.5900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		7.5000e-003	7.5000e-003	2.0000e-005		7.9500e-003
Energy	6.5300e-003	0.0593	0.0498	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003		71.1926	71.1926	1.3600e-003	1.3100e-003	71.6259
Mobile	2.4960	4.8374	26.6122	0.0432	3.2143	0.0509	3.2652	0.8565	0.0468	0.9033		3,715.2701	3,715.2701	0.2102		3,719.6841
Total	**3.3137**	**4.8968**	**26.6657**	**0.0435**	**3.2143**	**0.0554**	**3.2697**	**0.8565**	**0.0513**	**0.9078**		**3,786.4702**	**3,786.4702**	**0.2116**	**1.3100e-003**	**3,791.3179**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.8112	3.0000e-005	3.5900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		7.5000e-003	7.5000e-003	2.0000e-005		7.9500e-003
Energy	6.5300e-003	0.0593	0.0498	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003		71.1926	71.1926	1.3600e-003	1.3100e-003	71.6259
Mobile	2.4960	4.8374	26.6122	0.0432	3.2143	0.0509	3.2652	0.8565	0.0468	0.9033		3,715.2701	3,715.2701	0.2102		3,719.6841
Total	**3.3137**	**4.8968**	**26.6657**	**0.0435**	**3.2143**	**0.0554**	**3.2697**	**0.8565**	**0.0513**	**0.9078**		**3,786.4702**	**3,786.4702**	**0.2116**	**1.3100e-003**	**3,791.3179**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	On-site and Off-site utilities and improvements	Site Preparation	7/1/2015	9/10/2015	5	51	
2	Grading, Foundations, and slab-on-grade	Grading	7/1/2015	8/12/2015	5	31	
3	Parking Lot Paving	Paving	7/1/2015	7/1/2015	5	1	
4	Structure & Framing	Building Construction	8/13/2015	9/25/2015	5	30	
5	Rough-ins, exterior skin, roofing	Building Construction	9/4/2015	12/17/2015	5	75	
6	Interior finishes	Architectural Coating	10/25/2015	5/22/2016	5	151	
7	Exterior hardscape & landscape	Building Construction	2/8/2016	3/26/2016	5	36	
8	Fixtures, Furnishings, & Equipment	Building Construction	3/27/2016	5/23/2016	5	41	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 18,980; Non-Residential Outdoor: 6,327 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
On-site and Off-site utilities and improvements	Graders	1	8.00	174	0.41
On-site and Off-site utilities and improvements	Pavers	1	8.00	125	0.42
On-site and Off-site utilities and improvements	Plate Compactors	1	8.00	8	0.43
On-site and Off-site utilities and improvements	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading, Foundations, and slab-on-grade	Graders	1	6.00	174	0.41
Grading, Foundations, and slab-on-grade	Plate Compactors	1	8.00	8	0.43
Grading, Foundations, and slab-on-grade	Scrapers	1	8.00	361	0.48
Structure & Framing	Cranes	1	6.00	226	0.29
Structure & Framing	Welders	3	8.00	46	0.45
Rough-ins, exterior skin, roofing	Cranes	1	6.00	226	0.29
Rough-ins, exterior skin, roofing	Other Construction Equipment	1	8.00	171	0.42
Exterior hardscape & landscape	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Exterior hardscape & landscape	Trenchers	1	8.00	80	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
On-site and Off-site utilities and improvem	4	8.00	0.00	50.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading, Foundations, and slab-on-grade	3	10.00	0.00	30.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Structure & Framing	4	16.00	0.00	30.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Rough-ins, exterior skin, roofing	2	14.00	0.00	75.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Interior finishes	0	30.00	0.00	150.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Exterior hardscape & landscape	2	12.00	0.00	35.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Fixtures, Furnishings, & Equipment	0	20.00	0.00	20.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Parking Lot Paving	0	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 On-site and Off-site utilities and improvements - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.9155	19.6779	10.5015	0.0144		1.1463	1.1463		1.0554	1.0554		1,492.7875	1,492.7875	0.4390		1,502.0054
Total	**1.9155**	**19.6779**	**10.5015**	**0.0144**	**0.0000**	**1.1463**	**1.1463**	**0.0000**	**1.0554**	**1.0554**		**1,492.7875**	**1,492.7875**	**0.4390**		**1,502.0054**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0241	0.2529	0.3077	7.2000e-004	0.0169	4.2900e-003	0.0212	4.6300e-003	3.9500e-003	8.5800e-003		72.7405	72.7405	5.3000e-004		72.7517
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0716	0.7251	1.1800e-003	0.1022	8.9000e-004	0.1031	0.0271	8.2000e-004	0.0279		101.6989	101.6989	7.0800e-003		101.8477
Total	**0.0650**	**0.3245**	**1.0328**	**1.9000e-003**	**0.1191**	**5.1800e-003**	**0.1243**	**0.0317**	**4.7700e-003**	**0.0365**		**174.4394**	**174.4394**	**7.6100e-003**		**174.5993**

3.2 On-site and Off-site utilities and improvements - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.9155	19.6779	10.5015	0.0144		1.1463	1.1463		1.0554	1.0554	0.0000	1,492.787 5	1,492.787 5	0.4390		1,502.005 4
Total	**1.9155**	**19.6779**	**10.5015**	**0.0144**	**0.0000**	**1.1463**	**1.1463**	**0.0000**	**1.0554**	**1.0554**	**0.0000**	**1,492.787 5**	**1,492.787 5**	**0.4390**		**1,502.005 4**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0241	0.2529	0.3077	7.2000e-004	0.0169	4.2900e-003	0.0212	4.6300e-003	3.9500e-003	8.5800e-003		72.7405	72.7405	5.3000e-004		72.7517
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0716	0.7251	1.1800e-003	0.1022	8.9000e-004	0.1031	0.0271	8.2000e-004	0.0279		101.6989	101.6989	7.0800e-003		101.8477
Total	**0.0650**	**0.3245**	**1.0328**	**1.9000e-003**	**0.1191**	**5.1800e-003**	**0.1243**	**0.0317**	**4.7700e-003**	**0.0365**		**174.4394**	**174.4394**	**7.6100e-003**		**174.5993**

3.3 Grading, Foundations, and slab-on-grade - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0690	0.0000	0.0690	7.8500e-003	0.0000	7.8500e-003			0.0000			0.0000
Off-Road	2.2796	27.0011	15.5226	0.0201		1.2192	1.2192		1.1225	1.1225		2,091.8593	2,091.8593	0.6178		2,104.8330
Total	**2.2796**	**27.0011**	**15.5226**	**0.0201**	**0.0690**	**1.2192**	**1.2882**	**7.8500e-003**	**1.1225**	**1.1303**		**2,091.8593**	**2,091.8593**	**0.6178**		**2,104.8330**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0238	0.2496	0.3038	7.1000e-004	0.0169	4.2400e-003	0.0212	4.6300e-003	3.9000e-003	8.5300e-003		71.8019	71.8019	5.2000e-004		71.8129
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0511	0.0895	0.9063	1.4800e-003	0.1277	1.1200e-003	0.1289	0.0339	1.0200e-003	0.0349		127.1236	127.1236	8.8600e-003		127.3096
Total	**0.0749**	**0.3391**	**1.2101**	**2.1900e-003**	**0.1446**	**5.3600e-003**	**0.1500**	**0.0385**	**4.9200e-003**	**0.0434**		**198.9255**	**198.9255**	**9.3800e-003**		**199.1225**

3.3 Grading, Foundations, and slab-on-grade - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0690	0.0000	0.0690	7.8500e-003	0.0000	7.8500e-003			0.0000			0.0000
Off-Road	2.2796	27.0011	15.5226	0.0201		1.2192	1.2192		1.1225	1.1225	0.0000	2,091.8593	2,091.8593	0.6178		2,104.8330
Total	**2.2796**	**27.0011**	**15.5226**	**0.0201**	**0.0690**	**1.2192**	**1.2882**	**7.8500e-003**	**1.1225**	**1.1303**	**0.0000**	**2,091.8593**	**2,091.8593**	**0.6178**		**2,104.8330**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0238	0.2496	0.3038	7.1000e-004	0.0169	4.2400e-003	0.0212	4.6300e-003	3.9000e-003	8.5300e-003		71.8019	71.8019	5.2000e-004		71.8129
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0511	0.0895	0.9063	1.4800e-003	0.1277	1.1200e-003	0.1289	0.0339	1.0200e-003	0.0349		127.1236	127.1236	8.8600e-003		127.3096
Total	**0.0749**	**0.3391**	**1.2101**	**2.1900e-003**	**0.1446**	**5.3600e-003**	**0.1500**	**0.0385**	**4.9200e-003**	**0.0434**		**198.9255**	**198.9255**	**9.3800e-003**		**199.1225**

3.4 Parking Lot Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Paving	1.3100					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3100**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 Parking Lot Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Paving	1.3100					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3100**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.5 Structure & Framing - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4351	12.2075	8.3921	0.0119		0.7726	0.7726		0.7485	0.7485		1,066.6993	1,066.6993	0.3013		1,073.0266
Total	**2.4351**	**12.2075**	**8.3921**	**0.0119**		**0.7726**	**0.7726**		**0.7485**	**0.7485**		**1,066.6993**	**1,066.6993**	**0.3013**		**1,073.0266**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0246	0.2580	0.3139	7.3000e-004	0.0167	4.3800e-003	0.0210	4.5900e-003	4.0300e-003	8.6100e-003		74.1953	74.1953	5.4000e-004		74.2067
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0818	0.1432	1.4501	2.3700e-003	0.2044	1.7900e-003	0.2062	0.0542	1.6300e-003	0.0558		203.3978	203.3978	0.0142		203.6953
Total	**0.1064**	**0.4011**	**1.7640**	**3.1000e-003**	**0.2210**	**6.1700e-003**	**0.2272**	**0.0588**	**5.6600e-003**	**0.0644**		**277.5931**	**277.5931**	**0.0147**		**277.9020**

3.5 Structure & Framing - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.4351	12.2075	8.3921	0.0119		0.7726	0.7726		0.7485	0.7485	0.0000	1,066.6993	1,066.6993	0.3013		1,073.0266
Total	**2.4351**	**12.2075**	**8.3921**	**0.0119**		**0.7726**	**0.7726**		**0.7485**	**0.7485**	**0.0000**	**1,066.6993**	**1,066.6993**	**0.3013**		**1,073.0266**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0246	0.2580	0.3139	7.3000e-004	0.0167	4.3800e-003	0.0210	4.5900e-003	4.0300e-003	8.6100e-003		74.1953	74.1953	5.4000e-004		74.2067
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0818	0.1432	1.4501	2.3700e-003	0.2044	1.7900e-003	0.2062	0.0542	1.6300e-003	0.0558		203.3978	203.3978	0.0142		203.6953
Total	**0.1064**	**0.4011**	**1.7640**	**3.1000e-003**	**0.2210**	**6.1700e-003**	**0.2272**	**0.0588**	**5.6600e-003**	**0.0644**		**277.5931**	**277.5931**	**0.0147**		**277.9020**

3.6 Rough-ins, exterior skin, roofing - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2624	14.4996	6.5840	0.0104		0.7151	0.7151		0.6579	0.6579		1,089.3979	1,089.3979	0.3252		1,096.2278
Total	**1.2624**	**14.4996**	**6.5840**	**0.0104**		**0.7151**	**0.7151**		**0.6579**	**0.6579**		**1,089.3979**	**1,089.3979**	**0.3252**		**1,096.2278**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0246	0.2580	0.3139	7.3000e-004	0.0175	4.3800e-003	0.0219	4.7900e-003	4.0300e-003	8.8200e-003		74.1953	74.1953	5.4000e-004		74.2067
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0716	0.1253	1.2689	2.0700e-003	0.1788	1.5600e-003	0.1804	0.0474	1.4300e-003	0.0489		177.9730	177.9730	0.0124		178.2334
Total	**0.0962**	**0.3832**	**1.5827**	**2.8000e-003**	**0.1963**	**5.9400e-003**	**0.2022**	**0.0522**	**5.4600e-003**	**0.0577**		**252.1684**	**252.1684**	**0.0129**		**252.4401**

3.6 Rough-ins, exterior skin, roofing - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2624	14.4996	6.5840	0.0104		0.7151	0.7151		0.6579	0.6579	0.0000	1,089.397 9	1,089.397 9	0.3252		1,096.227 8
Total	**1.2624**	**14.4996**	**6.5840**	**0.0104**		**0.7151**	**0.7151**		**0.6579**	**0.6579**	**0.0000**	**1,089.397 9**	**1,089.397 9**	**0.3252**		**1,096.227 8**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0246	0.2580	0.3139	7.3000e-004	0.0175	4.3800e-003	0.0219	4.7900e-003	4.0300e-003	8.8200e-003		74.1953	74.1953	5.4000e-004		74.2067
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0716	0.1253	1.2689	2.0700e-003	0.1788	1.5600e-003	0.1804	0.0474	1.4300e-003	0.0489		177.9730	177.9730	0.0124		178.2334
Total	**0.0962**	**0.3832**	**1.5827**	**2.8000e-003**	**0.1963**	**5.9400e-003**	**0.2022**	**0.0522**	**5.4600e-003**	**0.0577**		**252.1684**	**252.1684**	**0.0129**		**252.4401**

3.7 Interior finishes - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.9420					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9420**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	0.2563	0.3118	7.3000e-004	0.0447	4.3500e-003	0.0490	0.0115	4.0000e-003	0.0155		73.7040	73.7040	5.4000e-004		73.7153
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1534	0.2684	2.7190	4.4400e-003	0.3832	3.3500e-003	0.3865	0.1016	3.0600e-003	0.1047		381.3708	381.3708	0.0266		381.9287
Total	**0.1778**	**0.5247**	**3.0308**	**5.1700e-003**	**0.4279**	**7.7000e-003**	**0.4356**	**0.1131**	**7.0600e-003**	**0.1202**		**455.0748**	**455.0748**	**0.0271**		**455.6439**

3.7 Interior finishes - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.9420					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9420**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0244	0.2563	0.3118	7.3000e-004	0.0447	4.3500e-003	0.0490	0.0115	4.0000e-003	0.0155		73.7040	73.7040	5.4000e-004		73.7153
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1534	0.2684	2.7190	4.4400e-003	0.3832	3.3500e-003	0.3865	0.1016	3.0600e-003	0.1047		381.3708	381.3708	0.0266		381.9287
Total	**0.1778**	**0.5247**	**3.0308**	**5.1700e-003**	**0.4279**	**7.7000e-003**	**0.4356**	**0.1131**	**7.0600e-003**	**0.1202**		**455.0748**	**455.0748**	**0.0271**		**455.6439**

3.7 Interior finishes - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.9420					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9420**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0231	0.2171	0.3019	7.2000e-004	0.0239	3.8000e-003	0.0277	6.3500e-003	3.5000e-003	9.8500e-003		72.8515	72.8515	5.1000e-004		72.8622
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1339	0.2405	2.4355	4.4400e-003	0.3832	3.1600e-003	0.3864	0.1016	2.9000e-003	0.1045		367.7536	367.7536	0.0243		368.2643
Total	**0.1570**	**0.4576**	**2.7375**	**5.1600e-003**	**0.4071**	**6.9600e-003**	**0.4140**	**0.1080**	**6.4000e-003**	**0.1144**		**440.6051**	**440.6051**	**0.0248**		**441.1265**

3.7 Interior finishes - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	1.9420					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9420**					**0.0000**	**0.0000**		**0.0000**	**0.0000**			**0.0000**			**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0231	0.2171	0.3019	7.2000e-004	0.0239	3.8000e-003	0.0277	6.3500e-003	3.5000e-003	9.8500e-003		72.8515	72.8515	5.1000e-004		72.8622
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1339	0.2405	2.4355	4.4400e-003	0.3832	3.1600e-003	0.3864	0.1016	2.9000e-003	0.1045		367.7536	367.7536	0.0243		368.2643
Total	**0.1570**	**0.4576**	**2.7375**	**5.1600e-003**	**0.4071**	**6.9600e-003**	**0.4140**	**0.1080**	**6.4000e-003**	**0.1144**		**440.6051**	**440.6051**	**0.0248**		**441.1265**

3.8 Exterior hardscape & landscape - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8113	7.3107	4.6231	5.7900e-003		0.5699	0.5699		0.5243	0.5243		602.4837	602.4837	0.1817		606.3001
Total	**0.8113**	**7.3107**	**4.6231**	**5.7900e-003**		**0.5699**	**0.5699**		**0.5243**	**0.5243**		**602.4837**	**602.4837**	**0.1817**		**606.3001**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0226	0.2125	0.2955	7.1000e-004	0.0174	3.7200e-003	0.0211	4.7500e-003	3.4200e-003	8.1700e-003		71.3000	71.3000	5.0000e-004		71.3105
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0536	0.0962	0.9742	1.7700e-003	0.1533	1.2600e-003	0.1545	0.0407	1.1600e-003	0.0418		147.1014	147.1014	9.7300e-003		147.3057
Total	**0.0762**	**0.3087**	**1.2697**	**2.4800e-003**	**0.1706**	**4.9800e-003**	**0.1756**	**0.0454**	**4.5800e-003**	**0.0500**		**218.4015**	**218.4015**	**0.0102**		**218.6162**

3.8 Exterior hardscape & landscape - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8113	7.3107	4.6231	5.7900e-003		0.5699	0.5699		0.5243	0.5243	0.0000	602.4837	602.4837	0.1817		606.3001
Total	**0.8113**	**7.3107**	**4.6231**	**5.7900e-003**		**0.5699**	**0.5699**		**0.5243**	**0.5243**	**0.0000**	**602.4837**	**602.4837**	**0.1817**		**606.3001**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0226	0.2125	0.2955	7.1000e-004	0.0174	3.7200e-003	0.0211	4.7500e-003	3.4200e-003	8.1700e-003		71.3000	71.3000	5.0000e-004		71.3105
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0536	0.0962	0.9742	1.7700e-003	0.1533	1.2600e-003	0.1545	0.0407	1.1600e-003	0.0418		147.1014	147.1014	9.7300e-003		147.3057
Total	**0.0762**	**0.3087**	**1.2697**	**2.4800e-003**	**0.1706**	**4.9800e-003**	**0.1756**	**0.0454**	**4.5800e-003**	**0.0500**		**218.4015**	**218.4015**	**0.0102**		**218.6162**

3.9 Fixtures, Furnishings, & Equipment - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0113	0.1066	0.1483	3.6000e-004	8.5200e-003	1.8700e-003	0.0104	2.3400e-003	1.7200e-003	4.0500e-003		35.7742	35.7742	2.5000e-004		35.7795
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0893	0.1603	1.6237	2.9600e-003	0.2555	2.1100e-003	0.2576	0.0678	1.9300e-003	0.0697		245.1691	245.1691	0.0162		245.5096
Total	**0.1006**	**0.2669**	**1.7720**	**3.3200e-003**	**0.2640**	**3.9800e-003**	**0.2680**	**0.0701**	**3.6500e-003**	**0.0737**		**280.9433**	**280.9433**	**0.0165**		**281.2890**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0113	0.1066	0.1483	3.6000e-004	8.5200e-003	1.8700e-003	0.0104	2.3400e-003	1.7200e-003	4.0500e-003		35.7742	35.7742	2.5000e-004		35.7795
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0893	0.1603	1.6237	2.9600e-003	0.2555	2.1100e-003	0.2576	0.0678	1.9300e-003	0.0697		245.1691	245.1691	0.0162		245.5096
Total	**0.1006**	**0.2669**	**1.7720**	**3.3200e-003**	**0.2640**	**3.9800e-003**	**0.2680**	**0.0701**	**3.6500e-003**	**0.0737**		**280.9433**	**280.9433**	**0.0165**		**281.2890**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	2.4960	4.8374	26.6122	0.0432	3.2143	0.0509	3.2652	0.8565	0.0468	0.9033		3,715.270 1	3,715.270 1	0.2102		3,719.684 1
Unmitigated	2.4960	4.8374	26.6122	0.0432	3.2143	0.0509	3.2652	0.8565	0.0468	0.9033		3,715.270 1	3,715.270 1	0.2102		3,719.684 1

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Library	703.00	581.88	318.63	1,368,130	1,368,130
Parking Lot	0.00	0.00	0.00		
Total	703.00	581.88	318.63	1,368,130	1,368,130

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Library	14.70	6.60	6.60	52.00	43.00	5.00	44	44	12
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.486685	0.070911	0.172614	0.163811	0.062980	0.009896	0.005016	0.012126	0.001124	0.001040	0.007729	0.000709	0.005359

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	6.5300e-003	0.0593	0.0498	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003		71.1926	71.1926	1.3600e-003	1.3100e-003	71.6259
NaturalGas Unmitigated	6.5300e-003	0.0593	0.0498	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003		71.1926	71.1926	1.3600e-003	1.3100e-003	71.6259

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Library	605.137	6.5300e-003	0.0593	0.0498	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003		71.1926	71.1926	1.3600e-003	1.3100e-003	71.6259
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.5300e-003**	**0.0593**	**0.0498**	**3.6000e-004**		**4.5100e-003**	**4.5100e-003**		**4.5100e-003**	**4.5100e-003**		**71.1926**	**71.1926**	**1.3600e-003**	**1.3100e-003**	**71.6259**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Library	0.605137	6.5300e-003	0.0593	0.0498	3.6000e-004		4.5100e-003	4.5100e-003		4.5100e-003	4.5100e-003		71.1926	71.1926	1.3600e-003	1.3100e-003	71.6259
Total		**6.5300e-003**	**0.0593**	**0.0498**	**3.6000e-004**		**4.5100e-003**	**4.5100e-003**		**4.5100e-003**	**4.5100e-003**		**71.1926**	**71.1926**	**1.3600e-003**	**1.3100e-003**	**71.6259**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8112	3.0000e-005	3.5900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		7.5000e-003	7.5000e-003	2.0000e-005		7.9500e-003
Unmitigated	0.8112	3.0000e-005	3.5900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		7.5000e-003	7.5000e-003	2.0000e-005		7.9500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0772					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.7336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5000e-004	3.0000e-005	3.5900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		7.5000e-003	7.5000e-003	2.0000e-005		7.9500e-003
Total	**0.8112**	**3.0000e-005**	**3.5900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**7.5000e-003**	**7.5000e-003**	**2.0000e-005**		**7.9500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0772					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.7336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.5000e-004	3.0000e-005	3.5900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		7.5000e-003	7.5000e-003	2.0000e-005		7.9500e-003
Total	**0.8112**	**3.0000e-005**	**3.5900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**7.5000e-003**	**7.5000e-003**	**2.0000e-005**		**7.9500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Quartz Hill

Los Angeles-Mojave Desert County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Library	12.50	1000sqft	1.25	12,500.00	0
Parking Lot	21.78	1000sqft	0.50	21,780.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	7			**Operational Year**	2016
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	1227.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 1.75 acre site per PD. 1.25 for buidling, 0.5 for parking.

Construction Phase - Construction schedule from applicant

Off-road Equipment - Exterior hard and landscape equip 8 hrs/day each piece unless Caleemod default is otherwise

Off-road Equipment - Fixtures - no equipment

Off-road Equipment - Grading equip assumed 8 hrs/day each piece unless Caleemod default is otherwise

Off-road Equipment - Interior Finishes - no equipment

Off-road Equipment - Utilities equip 8 hrs/day each piece unless Caleemod default is otherwise

Off-road Equipment - Rough-in equip 8 hrs/day each piece unless Caleemod default is otherwise. Plaster applicator shown as "other const equip".

Off-road Equipment - Structure equip 8 hrs/day each piece unless Caleemod default is otherwise

Trips and VMT - worker trips assumed each worker = 2 trips/day. All delivery and haul trucks assumed to be HHDT.

Grading - 2500 cy for "onsite" work, haul trucks activity based on applicant numbers

Architectural Coating -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	18980	18000
tblConstructionPhase	NumDays	10.00	151.00
tblConstructionPhase	NumDays	200.00	30.00
tblConstructionPhase	NumDays	200.00	75.00
tblConstructionPhase	NumDays	200.00	36.00
tblConstructionPhase	NumDays	200.00	41.00
tblConstructionPhase	NumDays	4.00	31.00
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	2.00	51.00
tblConstructionPhase	PhaseEndDate	7/15/2016	5/22/2016
tblConstructionPhase	PhaseEndDate	8/12/2015	9/25/2015
tblConstructionPhase	PhaseEndDate	1/8/2016	12/17/2015
tblConstructionPhase	PhaseEndDate	7/11/2016	3/26/2016

tblConstructionPhase	PhaseEndDate	10/23/2015	8/12/2015
tblConstructionPhase	PhaseEndDate	8/13/2015	7/1/2015
tblConstructionPhase	PhaseEndDate	9/9/2015	9/10/2015
tblConstructionPhase	PhaseStartDate	12/18/2015	10/25/2015
tblConstructionPhase	PhaseStartDate	7/2/2015	8/13/2015
tblConstructionPhase	PhaseStartDate	9/26/2015	9/4/2015
tblConstructionPhase	PhaseStartDate	5/23/2016	2/8/2016
tblConstructionPhase	PhaseStartDate	9/11/2015	7/1/2015
tblConstructionPhase	PhaseStartDate	8/13/2015	7/1/2015
tblGrading	AcresOfGrading	42.63	1.75
tblGrading	AcresOfGrading	25.50	0.00
tblGrading	MaterialExported	0.00	2,500.00
tblLandUse	LotAcreage	0.29	1.25
tblProjectCharacteristics	OperationalYear	2014	2016
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	11.51	11.05
tblTripsAndVMT	HaulingTripNumber	0.00	50.00
tblTripsAndVMT	HaulingTripNumber	313.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	150.00
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	HaulingTripNumber	0.00	75.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	35.00
tblTripsAndVMT	HaulingVehicleClass		HHDT
tblTripsAndVMT	HaulingVehicleClass		HHDT
tblTripsAndVMT	HaulingVehicleClass		HHDT
tblTripsAndVMT	VendorTripNumber	6.00	0.00
tblTripsAndVMT	VendorTripNumber	6.00	0.00

tblTripsAndVMT	VendorTripNumber	6.00	0.00
tblTripsAndVMT	VendorVehicleClass		HDT_Mix
tblTripsAndVMT	VendorVehicleClass		HDT_Mix
tblTripsAndVMT	VendorVehicleClass		HDT_Mix
tblTripsAndVMT	WorkerTripNumber	10.00	8.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	14.00	16.00
tblTripsAndVMT	WorkerTripNumber	14.00	12.00
tblTripsAndVMT	WorkerVehicleClass		LD_Mix
tblTripsAndVMT	WorkerVehicleClass		LD_Mix
tblTripsAndVMT	WorkerVehicleClass		LD_Mix
tblWater	IndoorWaterUseRate	391,111.35	375,466.90
tblWater	OutdoorWaterUseRate	611,738.27	587,268.74

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2321	1.7180	1.1175	1.6400e-003	0.0273	0.0886	0.1159	7.0800e-003	0.0822	0.0892	0.0000	147.4847	147.4847	0.0360	0.0000	148.2416
2016	0.1235	0.1632	0.2922	4.8000e-004	0.0284	0.0105	0.0389	7.5400e-003	9.6500e-003	0.0172	0.0000	39.1863	39.1863	4.4900e-003	0.0000	39.2806
Total	**0.3556**	**1.8812**	**1.4097**	**2.1200e-003**	**0.0557**	**0.0991**	**0.1548**	**0.0146**	**0.0918**	**0.1064**	**0.0000**	**186.6709**	**186.6709**	**0.0405**	**0.0000**	**187.5222**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.2321	1.7180	1.1175	1.6400e-003	0.0273	0.0886	0.1159	7.0800e-003	0.0822	0.0892	0.0000	147.4845	147.4845	0.0360	0.0000	148.2415
2016	0.1235	0.1632	0.2922	4.8000e-004	0.0284	0.0105	0.0389	7.5400e-003	9.6500e-003	0.0172	0.0000	39.1863	39.1863	4.4900e-003	0.0000	39.2806
Total	**0.3556**	**1.8812**	**1.4097**	**2.1200e-003**	**0.0557**	**0.0991**	**0.1548**	**0.0146**	**0.0918**	**0.1064**	**0.0000**	**186.6708**	**186.6708**	**0.0405**	**0.0000**	**187.5220**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1480	0.0000	3.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.1000e-004	6.1000e-004	0.0000	0.0000	6.5000e-004
Energy	1.1900e-003	0.0108	9.0900e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	40.8414	40.8414	9.1000e-004	3.6000e-004	40.9716
Mobile	0.3980	0.8159	4.6353	7.2300e-003	0.5147	8.2900e-003	0.5230	0.1374	7.6100e-003	0.1450	0.0000	563.6174	563.6174	0.0311	0.0000	564.2704
Waste						0.0000	0.0000		0.0000	0.0000	2.2431	0.0000	2.2431	0.1326	0.0000	5.0268
Water						0.0000	0.0000		0.0000	0.0000	0.1191	6.3569	6.4760	0.0124	3.2000e-004	6.8353
Total	**0.5472**	**0.8267**	**4.6447**	**7.2900e-003**	**0.5147**	**9.1100e-003**	**0.5238**	**0.1374**	**8.4300e-003**	**0.1458**	**2.3622**	**610.8163**	**613.1785**	**0.1770**	**6.8000e-004**	**617.1047**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1480	0.0000	3.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.1000e-004	6.1000e-004	0.0000	0.0000	6.5000e-004
Energy	1.1900e-003	0.0108	9.0900e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	40.8414	40.8414	9.1000e-004	3.6000e-004	40.9716
Mobile	0.3980	0.8159	4.6353	7.2300e-003	0.5147	8.2900e-003	0.5230	0.1374	7.6100e-003	0.1450	0.0000	563.6174	563.6174	0.0311	0.0000	564.2704
Waste						0.0000	0.0000		0.0000	0.0000	2.2431	0.0000	2.2431	0.1326	0.0000	5.0268
Water						0.0000	0.0000		0.0000	0.0000	0.1191	6.3569	6.4760	0.0124	3.2000e-004	6.8351
Total	**0.5472**	**0.8267**	**4.6447**	**7.2900e-003**	**0.5147**	**9.1100e-003**	**0.5238**	**0.1374**	**8.4300e-003**	**0.1458**	**2.3622**	**610.8163**	**613.1785**	**0.1770**	**6.8000e-004**	**617.1045**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	On-site and Off-site utilities and improvements	Site Preparation	7/1/2015	9/10/2015	5	51	
2	Grading, Foundations, and slab-on-grade	Grading	7/1/2015	8/12/2015	5	31	
3	Parking Lot Paving	Paving	7/1/2015	7/1/2015	5	1	
4	Structure & Framing	Building Construction	8/13/2015	9/25/2015	5	30	
5	Rough-ins, exterior skin, roofing	Building Construction	9/4/2015	12/17/2015	5	75	
6	Interior finishes	Architectural Coating	10/25/2015	5/22/2016	5	151	
7	Exterior hardscape & landscape	Building Construction	2/8/2016	3/26/2016	5	36	
8	Fixtures, Furnishings, & Equipment	Building Construction	3/27/2016	5/23/2016	5	41	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 18,980; Non-Residential Outdoor: 6,327 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
On-site and Off-site utilities and improvements	Graders	1	8.00	174	0.41
On-site and Off-site utilities and improvements	Pavers	1	8.00	125	0.42
On-site and Off-site utilities and improvements	Plate Compactors	1	8.00	8	0.43
On-site and Off-site utilities and improvements	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading, Foundations, and slab-on-grade	Graders	1	6.00	174	0.41
Grading, Foundations, and slab-on-grade	Plate Compactors	1	8.00	8	0.43
Grading, Foundations, and slab-on-grade	Scrapers	1	8.00	361	0.48
Structure & Framing	Cranes	1	6.00	226	0.29
Structure & Framing	Welders	3	8.00	46	0.45
Rough-ins, exterior skin, roofing	Cranes	1	6.00	226	0.29
Rough-ins, exterior skin, roofing	Other Construction Equipment	1	8.00	171	0.42
Exterior hardscape & landscape	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Exterior hardscape & landscape	Trenchers	1	8.00	80	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
On-site and Off-site utilities and improvem	4	8.00	0.00	50.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading, Foundations, and slab-on-grade	3	10.00	0.00	30.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Structure & Framing	4	16.00	0.00	30.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Rough-ins, exterior skin, roofing	2	14.00	0.00	75.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Interior finishes	0	30.00	0.00	150.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Exterior hardscape & landscape	2	12.00	0.00	35.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Fixtures, Furnishings, & Equipment	0	20.00	0.00	20.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Parking Lot Paving	0	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 On-site and Off-site utilities and improvements - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0498	0.5116	0.2730	3.7000e-004		0.0298	0.0298		0.0274	0.0274	0.0000	35.2101	35.2101	0.0104	0.0000	35.4275
Total	**0.0498**	**0.5116**	**0.2730**	**3.7000e-004**	**0.0000**	**0.0298**	**0.0298**	**0.0000**	**0.0274**	**0.0274**	**0.0000**	**35.2101**	**35.2101**	**0.0104**	**0.0000**	**35.4275**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.4000e-004	6.6800e-003	8.5300e-003	2.0000e-005	4.3000e-004	1.1000e-004	5.4000e-004	1.2000e-004	1.0000e-004	2.2000e-004	0.0000	1.7181	1.7181	1.0000e-005	0.0000	1.7184
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0500e-003	1.9700e-003	0.0203	3.0000e-005	2.6000e-003	2.0000e-005	2.6300e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.4731	2.4731	1.7000e-004	0.0000	2.4766
Total	**1.6900e-003**	**8.6500e-003**	**0.0288**	**5.0000e-005**	**3.0300e-003**	**1.3000e-004**	**3.1700e-003**	**8.1000e-004**	**1.2000e-004**	**9.3000e-004**	**0.0000**	**4.1912**	**4.1912**	**1.8000e-004**	**0.0000**	**4.1949**

3.2 On-site and Off-site utilities and improvements - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0498	0.5116	0.2730	3.7000e-004		0.0298	0.0298		0.0274	0.0274	0.0000	35.2100	35.2100	0.0104	0.0000	35.4275
Total	**0.0498**	**0.5116**	**0.2730**	**3.7000e-004**	**0.0000**	**0.0298**	**0.0298**	**0.0000**	**0.0274**	**0.0274**	**0.0000**	**35.2100**	**35.2100**	**0.0104**	**0.0000**	**35.4275**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.4000e-004	6.6800e-003	8.5300e-003	2.0000e-005	4.3000e-004	1.1000e-004	5.4000e-004	1.2000e-004	1.0000e-004	2.2000e-004	0.0000	1.7181	1.7181	1.0000e-005	0.0000	1.7184
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0500e-003	1.9700e-003	0.0203	3.0000e-005	2.6000e-003	2.0000e-005	2.6300e-003	6.9000e-004	2.0000e-005	7.1000e-004	0.0000	2.4731	2.4731	1.7000e-004	0.0000	2.4766
Total	**1.6900e-003**	**8.6500e-003**	**0.0288**	**5.0000e-005**	**3.0300e-003**	**1.3000e-004**	**3.1700e-003**	**8.1000e-004**	**1.2000e-004**	**9.3000e-004**	**0.0000**	**4.1912**	**4.1912**	**1.8000e-004**	**0.0000**	**4.1949**

3.3 Grading, Foundations, and slab-on-grade - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0700e-003	0.0000	1.0700e-003	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0353	0.4185	0.2406	3.1000e-004		0.0189	0.0189		0.0174	0.0174	0.0000	29.4144	29.4144	8.6900e-003	0.0000	29.5968
Total	**0.0353**	**0.4185**	**0.2406**	**3.1000e-004**	**1.0700e-003**	**0.0189**	**0.0200**	**1.2000e-004**	**0.0174**	**0.0175**	**0.0000**	**29.4144**	**29.4144**	**8.6900e-003**	**0.0000**	**29.5968**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8000e-004	3.9300e-003	5.0200e-003	1.0000e-005	2.6000e-004	7.0000e-005	3.2000e-004	7.0000e-005	6.0000e-005	1.3000e-004	0.0000	1.0110	1.0110	1.0000e-005	0.0000	1.0112
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	1.4700e-003	0.0151	2.0000e-005	1.9400e-003	2.0000e-005	1.9600e-003	5.2000e-004	2.0000e-005	5.3000e-004	0.0000	1.8429	1.8429	1.2000e-004	0.0000	1.8455
Total	**1.1600e-003**	**5.4000e-003**	**0.0201**	**3.0000e-005**	**2.2000e-003**	**9.0000e-005**	**2.2800e-003**	**5.9000e-004**	**8.0000e-005**	**6.6000e-004**	**0.0000**	**2.8539**	**2.8539**	**1.3000e-004**	**0.0000**	**2.8567**

3.3 Grading, Foundations, and slab-on-grade - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.0700e-003	0.0000	1.0700e-003	1.2000e-004	0.0000	1.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0353	0.4185	0.2406	3.1000e-004		0.0189	0.0189		0.0174	0.0174	0.0000	29.4144	29.4144	8.6900e-003	0.0000	29.5968
Total	**0.0353**	**0.4185**	**0.2406**	**3.1000e-004**	**1.0700e-003**	**0.0189**	**0.0200**	**1.2000e-004**	**0.0174**	**0.0175**	**0.0000**	**29.4144**	**29.4144**	**8.6900e-003**	**0.0000**	**29.5968**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8000e-004	3.9300e-003	5.0200e-003	1.0000e-005	2.6000e-004	7.0000e-005	3.2000e-004	7.0000e-005	6.0000e-005	1.3000e-004	0.0000	1.0110	1.0110	1.0000e-005	0.0000	1.0112
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.8000e-004	1.4700e-003	0.0151	2.0000e-005	1.9400e-003	2.0000e-005	1.9600e-003	5.2000e-004	2.0000e-005	5.3000e-004	0.0000	1.8429	1.8429	1.2000e-004	0.0000	1.8455
Total	**1.1600e-003**	**5.4000e-003**	**0.0201**	**3.0000e-005**	**2.2000e-003**	**9.0000e-005**	**2.2800e-003**	**5.9000e-004**	**8.0000e-005**	**6.6000e-004**	**0.0000**	**2.8539**	**2.8539**	**1.3000e-004**	**0.0000**	**2.8567**

3.4 Parking Lot Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.6000e-004**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Parking Lot Paving - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.6000e-004**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Structure & Framing - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0390	0.1953	0.1343	1.9000e-004		0.0124	0.0124		0.0120	0.0120	0.0000	15.4831	15.4831	4.3700e-003	0.0000	15.5749
Total	**0.0390**	**0.1953**	**0.1343**	**1.9000e-004**		**0.0124**	**0.0124**		**0.0120**	**0.0120**	**0.0000**	**15.4831**	**15.4831**	**4.3700e-003**	**0.0000**	**15.5749**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-004	4.1900e-003	5.3500e-003	1.0000e-005	2.6000e-004	7.0000e-005	3.3000e-004	7.0000e-005	6.0000e-005	1.4000e-004	0.0000	1.0785	1.0785	1.0000e-005	0.0000	1.0786
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2900e-003	2.4300e-003	0.0250	4.0000e-005	3.2100e-003	3.0000e-005	3.2300e-003	8.5000e-004	3.0000e-005	8.8000e-004	0.0000	3.0438	3.0438	2.1000e-004	0.0000	3.0481
Total	**1.6900e-003**	**6.6200e-003**	**0.0303**	**5.0000e-005**	**3.4700e-003**	**1.0000e-004**	**3.5600e-003**	**9.2000e-004**	**9.0000e-005**	**1.0200e-003**	**0.0000**	**4.1222**	**4.1222**	**2.2000e-004**	**0.0000**	**4.1267**

3.5 Structure & Framing - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0390	0.1953	0.1343	1.9000e-004		0.0124	0.0124		0.0120	0.0120	0.0000	15.4831	15.4831	4.3700e-003	0.0000	15.5749
Total	**0.0390**	**0.1953**	**0.1343**	**1.9000e-004**		**0.0124**	**0.0124**		**0.0120**	**0.0120**	**0.0000**	**15.4831**	**15.4831**	**4.3700e-003**	**0.0000**	**15.5749**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-004	4.1900e-003	5.3500e-003	1.0000e-005	2.6000e-004	7.0000e-005	3.3000e-004	7.0000e-005	6.0000e-005	1.4000e-004	0.0000	1.0785	1.0785	1.0000e-005	0.0000	1.0786
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2900e-003	2.4300e-003	0.0250	4.0000e-005	3.2100e-003	3.0000e-005	3.2300e-003	8.5000e-004	3.0000e-005	8.8000e-004	0.0000	3.0438	3.0438	2.1000e-004	0.0000	3.0481
Total	**1.6900e-003**	**6.6200e-003**	**0.0303**	**5.0000e-005**	**3.4700e-003**	**1.0000e-004**	**3.5600e-003**	**9.2000e-004**	**9.0000e-005**	**1.0200e-003**	**0.0000**	**4.1222**	**4.1222**	**2.2000e-004**	**0.0000**	**4.1267**

3.6 Rough-ins, exterior skin, roofing - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0473	0.5437	0.2469	3.9000e-004		0.0268	0.0268		0.0247	0.0247	0.0000	37.0607	37.0607	0.0111	0.0000	37.2930
Total	**0.0473**	**0.5437**	**0.2469**	**3.9000e-004**		**0.0268**	**0.0268**		**0.0247**	**0.0247**	**0.0000**	**37.0607**	**37.0607**	**0.0111**	**0.0000**	**37.2930**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	9.8200e-003	0.0125	3.0000e-005	6.4000e-004	1.6000e-004	8.1000e-004	1.8000e-004	1.5000e-004	3.3000e-004	0.0000	2.5276	2.5276	2.0000e-005	0.0000	2.5280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	4.9800e-003	0.0512	8.0000e-005	6.5700e-003	6.0000e-005	6.6300e-003	1.7500e-003	5.0000e-005	1.8000e-003	0.0000	6.2421	6.2421	4.2000e-004	0.0000	6.2510
Total	**3.5900e-003**	**0.0148**	**0.0637**	**1.1000e-004**	**7.2100e-003**	**2.2000e-004**	**7.4400e-003**	**1.9300e-003**	**2.0000e-004**	**2.1300e-003**	**0.0000**	**8.7697**	**8.7697**	**4.4000e-004**	**0.0000**	**8.7789**

3.6 Rough-ins, exterior skin, roofing - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0473	0.5437	0.2469	3.9000e-004		0.0268	0.0268		0.0247	0.0247	0.0000	37.0607	37.0607	0.0111	0.0000	37.2930
Total	**0.0473**	**0.5437**	**0.2469**	**3.9000e-004**		**0.0268**	**0.0268**		**0.0247**	**0.0247**	**0.0000**	**37.0607**	**37.0607**	**0.0111**	**0.0000**	**37.2930**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	9.8200e-003	0.0125	3.0000e-005	6.4000e-004	1.6000e-004	8.1000e-004	1.8000e-004	1.5000e-004	3.3000e-004	0.0000	2.5276	2.5276	2.0000e-005	0.0000	2.5280
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	4.9800e-003	0.0512	8.0000e-005	6.5700e-003	6.0000e-005	6.6300e-003	1.7500e-003	5.0000e-005	1.8000e-003	0.0000	6.2421	6.2421	4.2000e-004	0.0000	6.2510
Total	**3.5900e-003**	**0.0148**	**0.0637**	**1.1000e-004**	**7.2100e-003**	**2.2000e-004**	**7.4400e-003**	**1.9300e-003**	**2.0000e-004**	**2.1300e-003**	**0.0000**	**8.7697**	**8.7697**	**4.4000e-004**	**0.0000**	**8.7789**

3.7 Interior finishes - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0476					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0476**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.1000e-004	6.3800e-003	8.1400e-003	2.0000e-005	1.0700e-003	1.1000e-004	1.1800e-003	2.8000e-004	1.0000e-004	3.7000e-004	0.0000	1.6404	1.6404	1.0000e-005	0.0000	1.6407
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7100e-003	6.9700e-003	0.0716	1.1000e-004	9.2000e-003	8.0000e-005	9.2900e-003	2.4400e-003	7.0000e-005	2.5200e-003	0.0000	8.7389	8.7389	5.9000e-004	0.0000	8.7513
Total	**4.3200e-003**	**0.0134**	**0.0798**	**1.3000e-004**	**0.0103**	**1.9000e-004**	**0.0105**	**2.7200e-003**	**1.7000e-004**	**2.8900e-003**	**0.0000**	**10.3794**	**10.3794**	**6.0000e-004**	**0.0000**	**10.3920**

3.7 Interior finishes - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0476					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0476**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.1000e-004	6.3800e-003	8.1400e-003	2.0000e-005	1.0700e-003	1.1000e-004	1.1800e-003	2.8000e-004	1.0000e-004	3.7000e-004	0.0000	1.6404	1.6404	1.0000e-005	0.0000	1.6407
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7100e-003	6.9700e-003	0.0716	1.1000e-004	9.2000e-003	8.0000e-005	9.2900e-003	2.4400e-003	7.0000e-005	2.5200e-003	0.0000	8.7389	8.7389	5.9000e-004	0.0000	8.7513
Total	**4.3200e-003**	**0.0134**	**0.0798**	**1.3000e-004**	**0.0103**	**1.9000e-004**	**0.0105**	**2.7200e-003**	**1.7000e-004**	**2.8900e-003**	**0.0000**	**10.3794**	**10.3794**	**6.0000e-004**	**0.0000**	**10.3920**

3.7 Interior finishes - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0981					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0981**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1800e-003	0.0111	0.0162	4.0000e-005	1.1800e-003	1.9000e-004	1.3700e-003	3.2000e-004	1.8000e-004	4.9000e-004	0.0000	3.3422	3.3422	2.0000e-005	0.0000	3.3427
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6600e-003	0.0129	0.1322	2.3000e-004	0.0190	1.6000e-004	0.0191	5.0400e-003	1.5000e-004	5.1800e-003	0.0000	17.3707	17.3707	1.1100e-003	0.0000	17.3941
Total	**7.8400e-003**	**0.0240**	**0.1485**	**2.7000e-004**	**0.0202**	**3.5000e-004**	**0.0205**	**5.3600e-003**	**3.3000e-004**	**5.6700e-003**	**0.0000**	**20.7129**	**20.7129**	**1.1300e-003**	**0.0000**	**20.7367**

3.7 Interior finishes - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0981					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0981**					**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1800e-003	0.0111	0.0162	4.0000e-005	1.1800e-003	1.9000e-004	1.3700e-003	3.2000e-004	1.8000e-004	4.9000e-004	0.0000	3.3422	3.3422	2.0000e-005	0.0000	3.3427
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.6600e-003	0.0129	0.1322	2.3000e-004	0.0190	1.6000e-004	0.0191	5.0400e-003	1.5000e-004	5.1800e-003	0.0000	17.3707	17.3707	1.1100e-003	0.0000	17.3941
Total	**7.8400e-003**	**0.0240**	**0.1485**	**2.7000e-004**	**0.0202**	**3.5000e-004**	**0.0205**	**5.3600e-003**	**3.3000e-004**	**5.6700e-003**	**0.0000**	**20.7129**	**20.7129**	**1.1300e-003**	**0.0000**	**20.7367**

3.8 Exterior hardscape & landscape - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0142	0.1279	0.0809	1.0000e-004		9.9700e-003	9.9700e-003		9.1700e-003	9.1700e-003	0.0000	9.5649	9.5649	2.8900e-003	0.0000	9.6255
Total	**0.0142**	**0.1279**	**0.0809**	**1.0000e-004**		**9.9700e-003**	**9.9700e-003**		**9.1700e-003**	**9.1700e-003**	**0.0000**	**9.5649**	**9.5649**	**2.8900e-003**	**0.0000**	**9.6255**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-004	3.7800e-003	5.5100e-003	1.0000e-005	3.0000e-004	7.0000e-005	3.6000e-004	8.0000e-005	6.0000e-005	1.4000e-004	0.0000	1.1335	1.1335	1.0000e-005	0.0000	1.1337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	1.7800e-003	0.0183	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.4078	2.4078	1.5000e-004	0.0000	2.4111
Total	**1.3200e-003**	**5.5600e-003**	**0.0238**	**4.0000e-005**	**2.9300e-003**	**9.0000e-005**	**3.0100e-003**	**7.8000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**3.5413**	**3.5413**	**1.6000e-004**	**0.0000**	**3.5448**

3.8 Exterior hardscape & landscape - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0142	0.1279	0.0809	1.0000e-004		9.9700e-003	9.9700e-003		9.1700e-003	9.1700e-003	0.0000	9.5649	9.5649	2.8900e-003	0.0000	9.6255
Total	**0.0142**	**0.1279**	**0.0809**	**1.0000e-004**		**9.9700e-003**	**9.9700e-003**		**9.1700e-003**	**9.1700e-003**	**0.0000**	**9.5649**	**9.5649**	**2.8900e-003**	**0.0000**	**9.6255**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.0000e-004	3.7800e-003	5.5100e-003	1.0000e-005	3.0000e-004	7.0000e-005	3.6000e-004	8.0000e-005	6.0000e-005	1.4000e-004	0.0000	1.1335	1.1335	1.0000e-005	0.0000	1.1337
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	1.7800e-003	0.0183	3.0000e-005	2.6300e-003	2.0000e-005	2.6500e-003	7.0000e-004	2.0000e-005	7.2000e-004	0.0000	2.4078	2.4078	1.5000e-004	0.0000	2.4111
Total	**1.3200e-003**	**5.5600e-003**	**0.0238**	**4.0000e-005**	**2.9300e-003**	**9.0000e-005**	**3.0100e-003**	**7.8000e-004**	**8.0000e-005**	**8.6000e-004**	**0.0000**	**3.5413**	**3.5413**	**1.6000e-004**	**0.0000**	**3.5448**

3.9 Fixtures, Furnishings, & Equipment - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.4000e-004	2.2200e-003	3.2400e-003	1.0000e-005	1.7000e-004	4.0000e-005	2.1000e-004	5.0000e-005	4.0000e-005	8.0000e-005	0.0000	0.6662	0.6662	0.0000	0.0000	0.6663
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-003	3.4800e-003	0.0358	6.0000e-005	5.1300e-003	4.0000e-005	5.1800e-003	1.3600e-003	4.0000e-005	1.4000e-003	0.0000	4.7010	4.7010	3.0000e-004	0.0000	4.7073
Total	**2.0400e-003**	**5.7000e-003**	**0.0390**	**7.0000e-005**	**5.3000e-003**	**8.0000e-005**	**5.3900e-003**	**1.4100e-003**	**8.0000e-005**	**1.4800e-003**	**0.0000**	**5.3672**	**5.3672**	**3.0000e-004**	**0.0000**	**5.3736**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.4000e-004	2.2200e-003	3.2400e-003	1.0000e-005	1.7000e-004	4.0000e-005	2.1000e-004	5.0000e-005	4.0000e-005	8.0000e-005	0.0000	0.6662	0.6662	0.0000	0.0000	0.6663
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-003	3.4800e-003	0.0358	6.0000e-005	5.1300e-003	4.0000e-005	5.1800e-003	1.3600e-003	4.0000e-005	1.4000e-003	0.0000	4.7010	4.7010	3.0000e-004	0.0000	4.7073
Total	**2.0400e-003**	**5.7000e-003**	**0.0390**	**7.0000e-005**	**5.3000e-003**	**8.0000e-005**	**5.3900e-003**	**1.4100e-003**	**8.0000e-005**	**1.4800e-003**	**0.0000**	**5.3672**	**5.3672**	**3.0000e-004**	**0.0000**	**5.3736**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3980	0.8159	4.6353	7.2300e-003	0.5147	8.2900e-003	0.5230	0.1374	7.6100e-003	0.1450	0.0000	563.6174	563.6174	0.0311	0.0000	564.2704
Unmitigated	0.3980	0.8159	4.6353	7.2300e-003	0.5147	8.2900e-003	0.5230	0.1374	7.6100e-003	0.1450	0.0000	563.6174	563.6174	0.0311	0.0000	564.2704

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Library	703.00	581.88	318.63	1,368,130	1,368,130
Parking Lot	0.00	0.00	0.00		
Total	703.00	581.88	318.63	1,368,130	1,368,130

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Library	14.70	6.60	6.60	52.00	43.00	5.00	44	44	12
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.486685	0.070911	0.172614	0.163811	0.062980	0.009896	0.005016	0.012126	0.001124	0.001040	0.007729	0.000709	0.005359

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	29.0547	29.0547	6.9000e-004	1.4000e-004	29.1131
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	29.0547	29.0547	6.9000e-004	1.4000e-004	29.1131
NaturalGas Mitigated	1.1900e-003	0.0108	9.0900e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	11.7867	11.7867	2.3000e-004	2.2000e-004	11.8585
NaturalGas Unmitigated	1.1900e-003	0.0108	9.0900e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	11.7867	11.7867	2.3000e-004	2.2000e-004	11.8585

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Library	220875	1.1900e-003	0.0108	9.0900e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	11.7867	11.7867	2.3000e-004	2.2000e-004	11.8585
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.1900e-003**	**0.0108**	**9.0900e-003**	**6.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**11.7867**	**11.7867**	**2.3000e-004**	**2.2000e-004**	**11.8585**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Library	220875	1.1900e-003	0.0108	9.0900e-003	6.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	11.7867	11.7867	2.3000e-004	2.2000e-004	11.8585
Total		**1.1900e-003**	**0.0108**	**9.0900e-003**	**6.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**11.7867**	**11.7867**	**2.3000e-004**	**2.2000e-004**	**11.8585**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Library	33000	18.3797	4.3000e-004	9.0000e-005	18.4167
Parking Lot	19166.4	10.6750	2.5000e-004	5.0000e-005	10.6964
Total		**29.0547**	**6.8000e-004**	**1.4000e-004**	**29.1131**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Library	33000	18.3797	4.3000e-004	9.0000e-005	18.4167
Parking Lot	19166.4	10.6750	2.5000e-004	5.0000e-005	10.6964
Total		**29.0547**	**6.8000e-004**	**1.4000e-004**	**29.1131**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1480	0.0000	3.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.1000e-004	6.1000e-004	0.0000	0.0000	6.5000e-004
Unmitigated	0.1480	0.0000	3.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.1000e-004	6.1000e-004	0.0000	0.0000	6.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0141					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.1000e-004	6.1000e-004	0.0000	0.0000	6.5000e-004
Total	**0.1480**	**0.0000**	**3.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**6.1000e-004**	**6.1000e-004**	**0.0000**	**0.0000**	**6.5000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0141					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1339					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	3.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	6.1000e-004	6.1000e-004	0.0000	0.0000	6.5000e-004
Total	**0.1480**	**0.0000**	**3.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**6.1000e-004**	**6.1000e-004**	**0.0000**	**0.0000**	**6.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	6.4760	0.0124	3.2000e-004	6.8351
Unmitigated	6.4760	0.0124	3.2000e-004	6.8353

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Library	0.375467 / 0.587269	6.4760	0.0124	3.2000e-004	6.8353
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**6.4760**	**0.0124**	**3.2000e-004**	**6.8353**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Library	0.375467 / 0.587269	6.4760	0.0124	3.2000e-004	6.8351
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**6.4760**	**0.0124**	**3.2000e-004**	**6.8351**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	2.2431	0.1326	0.0000	5.0268
Unmitigated	2.2431	0.1326	0.0000	5.0268

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Library	11.05	2.2431	0.1326	0.0000	5.0268
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**2.2431**	**0.1326**	**0.0000**	**5.0268**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Library	11.05	2.2431	0.1326	0.0000	5.0268
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**2.2431**	**0.1326**	**0.0000**	**5.0268**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Appendix B
Biological Resources

Appendix B-1: Site Representative Photographs

Photo 1

Date: 08/01/14

Direction: North

Comment: Photo of elm tree overhanging eastern boundary of project site.

Photo 2

Date: 08/01/14

Direction: East

Comment: Photo of southwest corner of project site.

	Photo 3 Date: 08/01/14 Direction: Northwest Comment: Photo of pistachio trees on project site.
	Photo 4 Date: 08/01/14 Direction: East Comment: Photo of southern boundary of project site.

	Photo 5 Date: 08/01/14 Direction: Northeast Comment: Photo of debris pile on project site.
	Photo 6 Date: 08/01/14 Direction: West Comment: Photo of northern portion of project site.

	Photo 7 Date: 08/01/14 Direction: East Comment: Photo of northern portion of project site along West Avenue M-2.
	Photo 8 Date: 08/01/14 Direction: West Comment: Photo of northern portion of project site along West Avenue M-2.

	Photo 9 Date: 08/01/14 Direction: South Comment: Photo of residential area and driveway through the project site.
	Photo 10 Date: 08/01/14 Direction: South Comment: Photo taken from West Avenue M-2 of entire project site.

Appendix B-2. Special-Status Species Potential to Occur

Special Status Plants	Life Form and Habitat	Flower Season	Conservation Status	Occurrence Probability	Comments
Androsace elongate spp. *acuta* California androsace	Annual herb; Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland	March- June	4.2	**Less than reasonable**	Study area lacks suitable habitat.
Astragalus hornii var. *hornii* Horn's milk-vetch	Annual herb; Lake margins (alkaline), meadows and seeps, and playa	May- October	1B.1	**Less than reasonable**	Study area lacks suitable habitat.
Astragalus preussii var. *laxiflorus* Lancaster milk-vetch	Perennial herb; Chenopod scrub	March-May	1B.1	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Calochortus catalinae Catalina mariposa lily	Perennial bulbiferous herb; Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland	February- June	4.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Calochortus clavatus var. *gracilis* Slender mariposa lily	Perennial bulbiferous herb; Chaparral, coastal scrub, valley and foothill grassland	March-June	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Calochortus striatus Alkali mariposa lily	Perennial bulbiferous herb; Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps/alkaline, mesic	April-June	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Calystegia peirsonii Peirson's morning-glory	Perennial rhizomatous herb; Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland	April-June	4.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Canbya candida White pygmy-poppy	Annual herb; gravelly, sandy, granitic. Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland	March-June	4.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Castilleja plagiotoma Mojave paintbrush	Perennial herb (hemiparasitic); Great basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland	April-June	4.3	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development.

Special Status Plants	Life Form and Habitat	Flower Season	Conservation Status	Occurrence Probability	Comments
					Lacks suitable habitat.
Chorizanthe parryi var. *parryi* Parry's spineflower	Annual herb; Chaparral, coastal scrub/sandy or rocky openings.	April-June	1B.1	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Chorizanthe spinosa Mojave spineflower	Annual herb; sometimes alkaline; Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas	March- July	4.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Chorizanthe xanti var. *leucotheca* White-bracted spineflower	Annual herb; Mojavean desert scrub, Pinyon and juniper woodland.	April-June	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Cryptantha clokeyi Clokey's cryptantha	Annual herb; Mojavean desert scrub	April	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Cymopterus deserticola Desert cymopterus	Perennial herb; Joshua tree woodland, Mojavean desert scrub	March-May	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Eriastrum rosamondense Rosamond eriastrum	Annual herb; Chenopod scrub, Mojavean desert scrub, and playas	April-May	1B.1	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Eriophyllum mohavense Barstow woolly sunflower	Annual herb; Chenopod scrub, Mojavean desert scrub, playas	March-May	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Goodmania luteola Golden goodmania	Annual herb. Found in alkaline or clay soil in Mojavean desert scrub, meadows and seeps, and playas.	April-August	4.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.

Special Status Plants	Life Form and Habitat	Flower Season	Conservation Status	Occurrence Probability	Comments
Layia heterotricha Pale-yellow layia	Annual herb; Cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/alkaline or clay soil	March-June	1B.1	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Loeflingia squarrosa var. *artemisiarum* Sagebrush loeflingia	Annual herb; Desert dunes, Great Basin scrub, and Sonoran desert scrub/sandy soil	April-May	2B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Opuntia basilaris var. *brachyclada* Short-joint beavertail	Perennial stem succulent; Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland.	April- June	1B.2	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.
Perideridia pringlei Adobe yampah	Perennial herb; serpentinite, often clay. Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland.	April-July	4.3	**Less than reasonable**	Study area has heavily disturbed soils and is surrounded by development. Lacks suitable habitat.

Special Status Wildlife	Habitat and Distribution	Status	Occurrence Probability	Comments
Reptiles				
Emys marmorata Western pond turtle	Inhabits permanent or nearly permanent bodies of water in many habitat types; below 6000 ft elev. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks. Need suitable nesting sites.	Fed: none State: **CSC**	**Confirmed absent**	Study area lacks body of water.
Anniella pulchra pulchra silvery legless lizard	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Fed: none State: **CSC**	**Less than reasonable**	Study area contains compacted, disturbed soils with little moisture content.
Gopherus agassizii Desert tortoise	Widely distributed in the Mojave, Sonoran, and Colorado deserts from below sea level to 2200m. Most common in desert scrub, desert wash, and Joshua tree habitats, but occurs in almost every desert habitat except those on the most precipitous slopes.	Fed: **THR** State: **ST**	**Less than reasonable**	Study area is surrounded by development and lacks suitable habitat.
Phrynosoma blainvillei coast horned lizard	Inhabits coastal sage scrub & chaparral in arid & semi-arid climate conditions. Critical factors are the presence of loose soils with a high sand fraction; an abundance of native ants or other insects, especially harvester ants (*Pogonomyrmex* spp.); and the availability of both sunny basking spots and dense cover for refuge.	Fed: none State: **CSC**	**Less than reasonable**	Study area contains compacted, disturbed soils and lacks suitable habitat.
Rana draytonii California red-legged frog	Inhabits quiet pools of streams, marshes, and occasionally ponds.	Fed: **THR** State: **CSC**	**Confirmed absent**	Study area lacks streams, marshes, and occasional ponds.

Special Status Plants	Life Form and Habitat	Flower Season	Conservation Status	Occurrence Probability	Comments
Thamnophis hammondii two-striped garter snake	It is often in water and rarely found far from it, though it is also known to inhabit intermittent streams having rocky beds bordered by willow thickets or other dense vegetation.		Fed: none State: **CSC**	**Confirmed absent**	Study area is void of intermittent streams and lacks suitable habitat.
Birds					
Agelaius tricolor tricolored blackbird	Highly colonial species, most numerous in central valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, foraging area with insect prey within a few km of the colony.		Fed: none State: **CSC**	**Confirmed absent**	No suitable nesting or foraging habitat within the study area.
Asio flammeus Short-eared owl	Found in open areas with few trees, such as annual and perennial grassland, prairies, dunes, meadow, irrigated lands, and saline and fresh emergent wetlands.		Fed: none State: **CSC**	**Less than reasonable**	No suitable nesting or foraging habitat within the study area.
Athene cunicularia burrowing owl	Open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.		Fed: none State: **CSC**	**Less than reasonable**	No burrows present. Site lacks suitable foraging habitat due to heavy urbanization.
Buteo swainsoni Swainson's hawk	Breeds in stands with few trees, in juniper-sage flats, riparian areas and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.		Fed: none State: **ST**	**Less than reasonable**	Study area does not contain suitable nesting or foraging habitat and does not appear to support rodent populations.
Charadrius alexandrinus nivosus Western snowy plover	Nests on barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, and river bars. In California, most breeding occurs on dune-backed beaches, barrier beaches, and salt-evaporation ponds; infrequently on bluff-backed beaches.		Fed: **THR** State: **CSC**	**Less than reasonable**	No suitable beach or dune habitat is present.
Charadrius montanus Mountain plover	Short grasslands and plowed fields of the Central Valley from Sutter and Yuba counties southward. It is also found in foothill valleys west of the San Joaquin Valley, and in Imperial Valley.		Fed: none State: **CSC**	**Less than reasonable**	Study area lacks suitable habitat for nesting and foraging.
Lanius ludovicianus Loggerhead shrike	Found as a common resident and winter visitor throughout California in lowland and foothill habitats, where it frequents open areas with sparse shrubs and trees.		Fed: none State: **CSC**	**Low potential**	Study area lacks suitable habitat for nesting and contains low foraging habitat.
Toxostoma lecontei Le Conte's thrasher	Open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats, also occurs in Joshua tree habitat with scattered shrubs.		Fed: none State: **CSC**	**Less than reasonable**	Study area lacks suitable habitat for foraging and nesting.
Vireo bellii pusillus least Bell's vireo	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, baccharis, mesquite.		Fed: **END** State: **SE**	**Less than reasonable**	No riparian habitat is present.
Mammals					
Onychomys torridus ramona southern grasshopper mouse	Desert areas, especially scrub habitats with friable soils for digging. Prefers low to moderate shrub cover. Feeds almost exclusively on arthropods, especially scorpions and orthopteran insects.		Fed: none State: **CSC**	**Less than reasonable**	No suitable scrub habitat is present.

Special Status Plants	Life Form and Habitat	Flower Season	Conservation Status	Occurrence Probability	Comments
Taxidea taxus American badger	Most abundant in drier open stages of most shrub, forest, & herbaceous habitats, with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Prey on burrowing rodents. Dig burrows.		Fed: none State: **CSC**	**Less than reasonable**	No suitable den burrows observed. Urbanized area would preclude the species from the study area
Xerospermophilus mohavensis Mohave ground squirrel	Resident in the various desert scrub communities of the western Mojave Desert in southwestern Inyo, eastern Kern, northwestern San Bernardino, and extreme northeastern Los Angeles counties.		Fed: none State: **ST**	**Less than reasonable**	Study area is surrounded by development, lacks small mammal burrows and soils are heavily disturbed and compacted.

Special Status Vegetation Communities	Conservation Status	Occurrence Probability
Southern Coast Live Oak Riparian Forest	CNDDB	Not present
Southern Cottonwood Willow Riparian Forest	CNDDB	Not present
Southern Riparian Scrub	CNDDB	Not present
Southern Willow Scrub	CNDDB	Not present
Valley Needlegrass Grassland	CNDDB	Not present
Wildflower Field	CNDDB	Not present

Status Codes:

END: Federally Endangered; THR: Federally Threatened; FPE: Federally proposed Endangered; FPT: Federally proposed Threatened; FC: Federal Candidate species; SE: State Endangered; ST: State Threatened; SR: State Rare (used for plants only); SCE: State Candidate for Endangered listing; SCT: State Candidate for Threatened listing; CSC: State Species of Special Concern.
CRPR - List 1A (Presumed extinct in CA); List 1B (Rare, threatened or endangered in California and elsewhere); List 2 (Presumed extinct in CA, but more common elsewhere); List 3 (We need more information about this plant); List 4 (Limited distribution (watch list).

Occurrence Codes:

Confirmed Absent: Confirmed to be absent on the study area as a formal and/or practical matter. Typically based on results of focused surveys.

Less than Reasonable: Although occurrence may be remotely possible, the likelihood of occurrence is less than that required for any potentially applicable regulatory threshold. Further, the likelihood of meaningful value of the site to any population(s) of this taxon is less than reasonable.

Low: Occurrence of the species is reasonable but unlikely because of some combination of facts, for example: (1) the study area was the subject of unsuccessful searches conducted under relevant and reasonable circumstances, (2) potential habitat present is marginal or minimal in extent, (3) the best available information suggests the species is absent from the study area, and/or (4) available information sheds no clear light on the species likelihood on the study area, but it is known to be rare at best in the vicinity. Neither the species nor any indication of its presence was detected.

Moderate: The study area is within the range of the species, and contains potentially appropriate habitat. Neither individuals nor diagnostic sign were detected. It is nevertheless reasonable that some individuals may have been overlooked.

High: The study area is known to be within the range of the species, and contains potential habitat with a high likelihood of occupancy. Although no individuals or diagnostic sign were detected during current fieldwork by a qualified observer, it is likely that it is present to some degree given the best available information.

Confirmed Present: Confirmed present by a qualified biologist or other reliable source and there is no specific evidence that the species has subsequently become absent. Depending on the species and other information available, it may or may not be possible to determine what portions of the study area are currently in use without further studies.

Appendix C

Geotechnical Engineering Report

GEOTECHNICAL ENGINEERING REPORT

Proposed Warehouse/Auto Repair Facility
APN 3101-013-058
Avenue M-2, West of 50th Street West
Quartz Hill, Los Angeles County, California
PL-06948-01

Prepared For

YABITO CORPORATION

December 28, 2006

Prepared By

Earth Systems
Southern California
1024 West Avenue M-4
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December 28, 2006

PL-06948-01

Yabito Corporation
37824 5th Street East
Palmdale, California 93550

Attention: Mr. Carlos Sanchez

Subject: **Geotechnical Engineering Report**
Proposed Warehouse/Auto Repair Facility
APN 3101-013-058
Avenue M-2, West of 50th Street West
Quartz Hill, Los Angeles County, California

Presented herewith is Earth Systems Southern California's (ESSC's) Geotechnical Engineering Report prepared, as authorized, for the site of a proposed commercial development in Quartz Hill, Los Angeles County, California. The approximate 1.75-acre project site is located adjacent to the south side of Avenue M-2, approximately 150 feet west of 50th Street West, in the unincorporated community of Quartz Hill, Los Angeles County, California. The conclusions and recommendations contained in this report are based upon ESSC's understanding of the proposed development and on analyses of the data obtained from the field and laboratory testing programs. The recommendations provided in this report generally relate to criteria for site grading and foundation design. ESSC strives to provide its analyses and recommendations in accordance with the applicable standards of care for the geotechnical engineering profession at the time this study was conducted.

This report completes ESSC's scope of geotechnical engineering services authorized on October 17, 2006, which were performed in accordance with ESSC's proposal dated October 13, 2006. Other services that may be required, such as grading observation and construction testing, are additional services and will be billed according to the Fee Schedule in effect at the time such services are provided. Budgets for these services, which are dependent upon design and construction schedules, can be provided when requested.

Earth Systems Southern California appreciates this opportunity to provide professional geotechnical engineering services for this project. If you need clarification of the information contained in this report, or if we can be of additional service, please contact the undersigned.

Respectfully submitted,

Earth Systems
Southern California

Bruce A. Hick
Project Geotechnical Engineer

Distribution: 4 – Yabito Corporation 4 – Max-Well Engineering

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GEOTECHNICAL ENGINEERING REPORT
PROPOSED WAREHOUSE/AUTO REPAIR FACILITY
APN 3101-013-058
AVENUE M-2, WEST OF 50TH STREET WEST
QUARTZ HILL, LOS ANGELES COUNTY, CALIFORNIA

INTRODUCTION

This Geotechnical Engineering Report has been prepared for a proposed commercial development in Quartz Hill, Los Angeles County, California. The approximate 1.75-acre project site is located on the south side of Avenue M-2, approximately 150 feet west of 50th Street West, in the unincorporated community of Quartz Hill, Los Angeles County, California. The purpose of Earth Systems Southern California's (ESSC's) services was to evaluate the geotechnical engineering characteristics of the on-site subsurface soils relative to the anticipated site development.

This report includes:

1. Descriptions of the field exploration and laboratory tests performed.

2. Conclusions and recommendations relating to construction of the proposed development based upon analyses of data obtained from the exploration and testing programs and on knowledge of the general and site specific characteristics of the subsurface soils.

PROJECT DESCRIPTION

Based upon review of the Site Plan supplied by Max-Well Engineering, ESSC understands that plans are to construct an approximate 26,650 square foot warehouse/auto repair facility along with associated site improvements, including site pavement, access lane construction and typical landscaping. ESSC has not received building or foundation plans for the proposed development as of this writing. However, based upon past experience, it is anticipated the proposed structure will be single or two-story, of wood frame, masonry, or concrete tilt-up panel construction with a slab-on-grade ground floor. Estimated maximum structural loads are 2,500 plf for continuous foundations and 100 kips for isolated column loads.

Due to the relatively flat site topography, ESSC has assumed that conventional cut and fill methods will be used to grade the site, with maximum slope heights of five feet. Sewage disposal will be provided by a public sewer system. These assumptions were used as the basis for the exploration, testing, and analyses programs, and for the recommendations contained in this report.

PURPOSE AND SCOPE OF SERVICES

The purpose of ESSC's services was to evaluate the project site soil conditions, and to provide preliminary geotechnical engineering conclusions and recommendations relative to the project site and the proposed development. ESSC's scope of services included the following:

A. A general geotechnical engineering reconnaissance of the site.

B. Shallow subsurface exploration of the project site by drilling two (2) test borings.

C. Geotechnical laboratory testing of selected soil samples obtained from the exploratory soil boring excavated for this project.

D. Engineering analyses of the data obtained from the exploration and testing programs.

E. A summary of findings and recommendations in this written report.

Contained in this report are:

1. Discussions on local and site specific soil conditions.

2. Results of laboratory tests and field data.

3. Recommendations relating to the proposed site development, including allowable foundation bearing capacity, recommendations for foundation design, estimated total and differential settlements, site grading criteria, lateral earth pressures, soil expansion characteristics, soil corrosion potential, site liquefaction potential, and preliminary pavement sections.

SITE DESCRIPTION

The approximate 1.25-acre rectangular-shaped project site is located on the south side of Avenue M-2, approximately 150 feet west of 50th Street West, in the unincorporated community of Quartz Hill, Los Angeles County, California. The site is located at approximately 34.6433° latitude and approximately 118.2184° longitude. Access to the site is available from Avenue M-2, a poorly maintained dirt road located adjacent to the northern boundary of the site (see attached Site Plan & Vicinity Map in Appendix A).

Topographically, the site consists of relatively flat ground that is sloping to the north at an approximate one percent gradient. There is less than 5 feet of elevation differential across the site. At the time of the field exploration, the site consisted of vacant, unimproved land. Trash and debris was observed scattered across the project site, especially adjacent to the existing street. The site was vegetated with a light to moderate covering of typical desert vegetation, consisting of weeds, grasses, brush, and bushes. Several dirt trails traverse the site. The above cited descriptions are intended to be illustrative, and are specifically not intended for use as a legal description of the subject property in any matter.

FIELD EXPLORATION

The field exploration for this study, conducted on October 31, 2006, consisted of two (2) exploratory soil borings drilled to depths of approximately 16 and 31 feet below the existing ground surface.

Boring B-1 was terminated due to bedrock. The borings were drilled with a Mobil B-51 truck-mounted drilling rig using eight-inch diameter continuous flight hollow stem auger in accordance with generally accepted geotechnical exploration procedures (ASTM D 1452). The approximate location of the exploratory borings, as indicated on the attached Site Plan & Vicinity Map in Appendix A, were determined by sighting and tape measuring from existing site improvements. The exploration locations should be considered accurate only to the degree implied by the measurement method used.

Bulk disturbed samples of the subsurface soils were obtained from tailings developed during excavation of the test borings. These samples were secured for classification and testing purposes and represent a mixture of soils within the noted depths.

Soil samples ("ring samples") were secured from within the soil borings using a three-inch O. D. ring sampler (ASTM D 3550). The sampler shoe is similar to the type specified in ASTM D 1586. A 140-pound hammer falling approximately 30 inches (ASTM D 1586) drove the sampler. The number of blows required to drive the sampler one-foot was recorded in six-inch increments. Recovered soil samples were sealed in plastic containers and brought to ESSC's laboratory for further classification and testing.

The Boring Logs for this report, included in Appendix A, represent ESSC's interpretation of the field logs prepared for each boring by ESSC staff, along with their interpretation of soil conditions between samples and results of laboratory tests. While the noted stratification lines represent approximate boundaries between soil types, the actual transitions may be gradual.

LABORATORY TESTING

After visual and tactile classification in the field, the soil samples were brought to ESSC's laboratory. The soil classifications were checked in accordance with the Unified Soil Classification System and a testing program was established as follows:

A. Soil samples and field logs were reviewed to assess which samples would be analyzed further.

B. In-situ moisture content and dry unit weight for soil core samples were developed in accordance with ASTM D 2937.

C. The relative strength characteristics of the subsurface soils were estimated from the results of direct shear tests (ASTM D 3080) conducted on select ring samples. The samples were placed in contact with water for at least 24 hours before testing and then sheared under normal loads ranging from 0.5 to 2.3 KSF. Testing was conducted to obtain residual (ultimate) shear strengths.

D. The relative strength characteristics of remolded (compacted) samples of the near-surface soils were estimated from the results of direct shear tests (ASTM D 3080) conducted on samples remolded to approximately 90% of maximum dry density as determined by ASTM D 1557 test procedures. The remolded samples were submerged in water for at least 24 hours before testing and then sheared under normal loads ranging from approximately 0.5 to 2.3 KSF. Testing was conducted to obtain residual (ultimate) shear strengths.

E. Consolidation tests (ASTM D 2435) were conducted on select ring samples. The maximum stress during testing was 4.6 KSF. The samples were saturated at 2.3 KSF to check the hydrocompression potential. The samples were unloaded to 1.2 KSF to check rebound.

F. Schiff Associates of Claremont, California performed soil chemistry tests on a sample of the site soil provided by ESSC. Tests consisted of sulfate, pH and Soil Resistivity, as well as several other chemical content tests.

G. Additional tests consisted of Maximum Density-Optimum Moisture (ASTM D 1557) and Expansion Index (ASTM D 4829).

Refer to Appendix B for the laboratory test results. Presentation of the test results provides only that information considered pertinent. References to ASTM and other test standards refer to the standard currently in effect.

SUBSURFACE SOIL CONDITIONS

The native soils encountered in the exploratory borings are alluvial deposits, consisting predominantly of silty sands with gravel (SM soil type based upon the Unified Soil Classification System) overlying shallow bedrock. The bedrock encountered consists of highly weathered Pelona Schist and was encountered in both borings at depths of approximately 14 feet (Boring B-2) to 19 feet (Boring B-1) below the existing ground elevation. The bedrock encountered was severely to completely weathered at the soil/rock contact, but becomes less weathered with depth.

Some of the upper three to four feet of the native site soils were found to be relatively loose, non-uniform, and of low relative compaction. The underlying native soils encountered below a depth of approximately four feet were found to be medium dense to dense. The Boring Logs in Appendix A contain more detailed descriptions of the soil encountered in the exploratory test borings. Per the 2001 California Building Code (CBC) Table 16-J, the site subgrade classification is a very dense soil and soft rock (S_C).

Based upon the consolidation test results, some of the native site soils within the top three to four feet are anticipated to demonstrate a slight to moderate tendency to hydrocompress (experience a loss in volume upon wetting, with or without additional loading; commonly referred to as "collapsing soil"). The soils tested below a depth of approximately four feet, through the depths tested, were found to demonstrate a negligible to slight tendency to hydrocompress.

Based upon the Expansion Index Test (ASTM D 4829) results, the upper site soils are considered to have a "very low" (0-20) expansion potential. Refer to Section G of the Recommendations section for explanations and recommendations for dealing with expansive soils.

GROUNDWATER

Free groundwater or perched water was not encountered in the borings at the time of drilling. Static aquifer groundwater levels in the vicinity of the site are estimated to be deeper than 100 feet below the existing surface (U. S. Geological Survey Water Data Report CA 93-5; Volume V: Groundwater Data, March 1993). Fluctuations in groundwater levels may occur due to variations in rainfall, regional climate, and other factors.

REGIONAL GEOLOGY

The project site is located in the south-central portion of the Antelope Valley. Lithologic units exposed in this area consist predominantly of deep Quaternary sediments. Local active faults are typically located along the margins of the Antelope Valley.

The San Andreas rift zone, which is several miles wide, dominates the geology of the southern Antelope Valley. The rift zone is an extensive zone of active and potentially active faults that extends from the Gulf of California to Cape Mendocino in northern California. The San Andreas fault, and associated subsidiary faults, is the closest active fault to the site. The San Andreas fault, at its nearest point, is approximately 3 miles southwest of the site. No known active faults exist within the project site boundaries.

GEOLOGIC HAZARDS

Based on the site reconnaissance and a review of selected geologic references, the geologic hazards that could affect the proposed development generally include seismically related hazards. These hazards are discussed below.

Fault Rupture

No active faults have been mapped across the project site. Therefore, the potential hazard due to active fault ground rupture is considered minimal. The site is not located within an Alquist-Priolo Earthquake Fault Zone, as currently published by the State of California. These zones are defined by the California State Division of Mines and Geology to delineate known active or potentially active faults.

Liquefaction

Liquefaction is defined as a loss of strength of saturated cohesionless soil generally due to seismic shaking. Soil types most susceptible to liquefaction are loose, saturated silty to clean fine sands. Based on the site exploration, the shallow alluvial soils below this site consist of sands that are generally in a medium dense to dense state overlaying relatively shallow bedrock. Static groundwater depths on this site are greater than 50 feet. Where groundwater levels are greater than 50 feet deep, it is generally thought that surface damage from deeper liquefaction will not occur. Therefore, since the static groundwater level under the site is greater than 50 feet deep and the foundation soils are relatively dense in nature, it is ESSC's opinion that hazards from liquefaction on this site should be negligible.

Seismic Hazards

The site is located in Southern California, which is an active seismic area. The site is within Seismic Zone 4 as designated by the 1997 edition of the Uniform Building Code. Major historic earthquakes felt in the vicinity of Quartz Hill have usually originated from faults located outside the area. These include the 1857 Fort Tejon, 1872 Owens Valley, 1952 Arvin-Tehachapi, 1971 San Fernando, 1987 Whittier, 1992 Landers and Big Bear events, 1994 Northridge and the 1999 Hector Mine earthquakes. Table I (below) lists significant recorded earthquakes felt in the Quartz Hill area and the estimated intensity of ground shaking at the site based on the Modified Mercalli Scale. A description of the Modified Mercalli Scale is included as Table II (page 8) of this report.

TABLE I

Earthquake (Fault)	Approx. Distance to Epicenter (miles)	Earthquake Magnitude*	Estimated Intensity at the Site **	Date
Fort Tejon (San Andreas)	100	8.0	VIII	1857
Owens Valley (Sierra Nevada)	142	7.6	VI	1872
Arvin-Tehachapi (White Wolf)	51	7.5	VII	1952
San Fernando (San Fernando)	20	6.6	VI	1971
Whittier	42	5.9	IV	1987
Landers	106	7.3	V	1992
Northridge	35	6.7	V	1994
Hector Mine	111	7.1	V	1999

*Moment Magnitude
**Modified Mercalli Scale

From Table I, it appears that the past maximum intensity of historic earthquakes felt in the Quartz Hill area due to regional faults has been on the order of VIII on the Modified Mercalli Scale.

Estimated maximum Mercalli intensities at the site for a 7.9+ moment magnitude earthquake occurring on the local San Andreas Fault are approximately VIII. Intense ground shaking lasting at least 60 seconds is anticipated. Aftershocks with magnitudes up to 7 are expected.

Ground Fissuring

Areal subsidence could also occur at the site, but would probably occur on a regional basis. Ground fissuring is a recently observed phenomenon in the northwest Lancaster area and at Edwards Air Force Base. It is thought to occur due to areal subsidence related to extensive groundwater withdrawal, tensional stresses, and erosion. Documented hazards from ground surface fissuring observed in other areas of California have included foundation distress and adverse settlement, as well as cracking of pavement and utilities.

At this time, the areas of predominant fissuring in the Antelope Valley are located north of Avenue I in Lancaster. As of this date, ESSC is not aware of documented evidence of structural damage to buildings in the immediate area of the project site attributed to the ground fissuring phenomena. ESSC's personnel observed no obvious evidence of fissuring on this site at the time of the field exploration.

The location of ground fissuring in the Lancaster area appears to be related to specific soil types, relative location within the area of areal subsidence, and the potential for storm runoff to erode existing fissures. Accurate prediction of future areas of fissuring is beyond the current state of the art for this profession, especially as changes in groundwater pumping and location of well fields could alter the location and magnitude of areal subsidence and associated tensional stresses.

Other Secondary Seismic Hazards

Other seismic hazards related to ground shaking include ground lurching, landslides, tsunamis, seiches, and seismic-induced settlements. Ground lurching is generally associated with fault rupture and liquefaction. As these two hazards are considered unlikely, it is ESSC's opinion that the potential for ground lurching is also low. Due to the relatively flat site topography, hazards from landslides are considered negligible. Due to the inland location of the site, hazards from tsunamis are considered nonexistent.

Two large water storage facilities are currently located approximately 0.75 miles northeast of the project site. These reservoirs are located at a higher elevation than the project site. If these tanks were to release water, it is anticipated that existing or planned storm water control facilities would minimize the impact on the project site. No other water storage facilities are currently located up-gradient of the property.

Seismically induced settlement may occur within the on-site younger alluvial soils. However, the near surface soils will be densified by remedial grading to mitigate most settlement potentials. Additional settlement may occur due to seismic shaking, but will most likely occur on an areal basis.

Table II
Modified Mercalli Intensity Scale of 1931[1], (1956 version)[2]

Masonry A, B, C, D. To avoid ambiguity of language, the quality of masonry, brick or otherwise, is specified by the following lettering.

Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally and bound together by using steel, concrete, etc.; designed to resist lateral forces.

Masonry B: Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces.

Masonry C: Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.

Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.

I.	**Not felt. Marginal and long-period effects of large earthquakes.**
II.	**Felt by persons at rest, on upper floors, or favorably placed.**
III.	**Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.**
IV.	**Hanging objects swing. Vibrations like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV wooden walls and frame creak.**
V	**Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.**
VI.	**Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken visibly, or heard to rustle.**
VII.	**Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices also unbraced parapets and architectural ornaments. Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.**
VIII.	**Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.**
IX.	**General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground. In alluviated areas sand and mud ejected, earthquake fountains, sand craters.**
X.	**Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.**
XI.	**Rails bent greatly. Underground pipelines completely out of service.**
XII.	**Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.**

[1]Original 1931 version in Wood, H. O., and Neumann, F., 1931, Modified Mercalli intensity scale of 1931: Seismological Society of America Bulletin, v. 53, no. 5, p. 979-987.
[2]1956 version prepared by Charles F. Richter, in Elementary Seismology, 1958, p. 137-138, W. H. Freeman & Co.

Erosion

The project site is in an area where minor sheet flooding and erosion could occur. Appropriate site analyses, project design, project construction, and site maintenance should minimize the sheet flooding potential.

DISCUSSION AND CONCLUSIONS

Based upon the field exploration, laboratory testing, ESSC's understanding of the proposed site development, and past experience, it is ESSC's opinion that the site, when modified as recommended in this report, is suitable for the intended construction.

Site Grading

As mentioned in the Soil Conditions Section, the upper three to four feet of the native soils were found to be relatively loose, non-uniform, of low relative compaction, and subject to significant hydrocompression. It is anticipated that these upper soils will be further disturbed during the demolition/removal of existing site structures and improvements. Based upon these conditions, it is ESSC's opinion that the upper native soils will not provide uniform support for the proposed structures without remedial grading. To provide a more uniform bearing for the proposed structures, it is recommended that a recompacted soil mat be constructed beneath all structural foundations and slab-on-grade construction. Refer to Section A of the Recommendations of this report for more detailed discussions and recommendations regarding site preparation.

Foundation Design and Settlements

If the preliminary recommendations for site preparation and grading are followed, conventional shallow (continuous and isolated pad) foundations may be used to support the proposed structures. If the preliminary recommendations for foundation design and construction are followed, total settlement of the proposed structures should be approximately three-quarters of an inch. Differential settlement across a thirty-foot span should be less than 0.0015 radians. Refer to Section D of the Recommendations section of this report for more detailed discussions and recommendations regarding foundation design.

Section 111 Statement

Based on the findings summarized in this report, and provided the recommendations in this report are incorporated into site development, it is ESSC's opinion that construction of the proposed improvements will not be subject to a geologic hazard from landslides, settlement, or slippage. It is also ESSC's opinion that the proposed improvements and anticipated site grading will not adversely affect the geologic stability of the site or adjacent properties provided ESSC's recommendations are followed. Test findings and statements of professional opinions do not constitute a guarantee or warranty, expressed or implied.

RECOMMENDATIONS

Based upon the field exploration, laboratory testing, ESSC's interpretation of data from the exploration and testing programs, and past experience, it is ESSC's opinion that the following recommendations should be incorporated into site preparation, design, and construction of the proposed site development.

A. Site Preparation

1. Any existing pavements, slabs, foundations, vegetation (including root balls), trash piles, abandoned underground utilities, and other debris should be removed from the proposed construction areas. It is possible that underground facilities (seepage pits, septic tanks, cisterns, foundations, etc.) may be present on the site. All such facilities should be removed in their entirety or properly abandoned. All strippings and debris should be removed from the site in order to preclude their incorporation in site fill or remedial excavation backfill.

2. Depressions resulting from removals under Items 1 above should have debris and loose soils removed and filled with suitable soils placed as recommended below.

3. In order to minimize potential settlement problems associated with a structure supported on a nonuniform thickness of compacted fill, the geotechnical engineers should be consulted for site grading recommendations relative to backfilling large and/or deep depressions resulting from removals under Item 1.

4. To provide a more uniform bearing for the proposed structure foundations, structural retaining walls, and building slab-on-grade construction, the following remedial grading is recommended:

   a. Existing soils beneath the proposed building areas, including a distance of at least five feet beyond the foundation perimeter, should be excavated a minimum of 42 inches below existing site grade or finished subgrade (pad elevation), whichever is lower. **The base of the remedial excavation across an individual building pad should be a level elevation.** The bottom of the remedial excavation should then be scarified (ripped) 6 inches.

   b. One intent of the above remedial grading recommendations is to remove all of the existing artificial fill and the upper loose site soils subject to significant hydrocompression within the proposed building areas. All exposed ground surfaces (subgrades) at the base of the remedial excavations should be reviewed for possible loose/soft soils and tested to verify that an "in-place dry density" ("IPD") of at least **106.0 p.c.f.** is present. If this density does not exist at the specified depth, additional excavation will be required until suitable subgrade densities are found.

c. The excavated soils may be reused to backfill the remedial excavations provided they are cleaned of any deleterious materials and debris, and are properly moisture conditioned and compacted as recommended in this report. During replacement of the excavated soils in the remedial excavations, and recompaction of the scarified soils, the soils should be moisture conditioned to near optimum moisture content and be uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, fill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

d. The geotechnical consultant's representative should review the site grading prior to scarification of the bottom of the remedial excavations. Local variations in soil conditions may warrant increasing the depth of remedial excavation. Any deeper areas of loose soils should be removed and be replaced as compacted, engineered fill.

5. To provide a more uniform bearing for the proposed traffic bearing Asphalt Concrete, Portland Cement Concrete pavement construction and any proposed exterior non-traffic bearing concrete flatwork (sidewalks, patios, walkways etc.), the following remedial grading is recommended:

   a. Existing soils beneath the proposed pavement sections, including a distance of at least two feet beyond the pavement perimeter, where obtainable, should be excavated a minimum of 6 inches below existing site grade or finished subgrade, whichever is lower. The bottom of the remedial excavation should then be scarified (ripped) 6 inches.

   b. The excavated soils may be reused to backfill the remedial excavations provided they are cleaned of any deleterious materials and debris, and are properly moisture conditioned and compacted as recommended in this report. During replacement of the excavated soils in the remedial excavations, and recompaction of the scarified soils, the soils should be moisture conditioned to near optimum moisture content and be uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, fill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

   c. The geotechnical consultant's representative should review the site grading prior to scarification of the bottom of the remedial excavations. Local variations in soil conditions may warrant increasing the depth of remedial excavation. Any deeper areas of loose soils should be removed and be replaced as compacted, engineered fill.

6. Import soils should be equal to, or better than, the on-site soils in strength, expansion, compressibility, and soil chemistry characteristics. In general, import material should

be free of organic matter and deleterious substances, have 100% passing a two-inch sieve, 60% to 100% passing a #4 sieve, no more than 20% passing a #200 sieve, an Expansion Index less than 20, a Liquid Limit less than 35, and a Plasticity Index less than 12. Import soils can be evaluated prior to their use, but will not be prequalified by the geotechnical consultant. Approval of import soils will be given only after the material is on the project, either in-place, or stockpiled in adequate quantity to complete the project.

7. Backfill around or adjacent to confined areas (i.e. interior utility trench excavations, etc.) may be performed with a lean sand/cement slurry (minimum two sacks of cement) or "flowable fill" material (a mixture of sand/cement/fly ash). The fluidity and lift placement thickness of any such material should be controlled in order to prevent "floating" of any "submerged" structure.

8. Suitable fill soils should be moisture conditioned to at least optimum moisture content and be uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. To aid in the compaction operation, fill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

9. Shrinkage because of excavation and compaction of the upper site soils is expected to be 13 to 18 percent of any excavated or scarified site soils. This estimate is based upon compactive effort needed to produce an average degree of compaction of approximately 92 percent and may vary depending on contractor methods. During compaction, an additional 0.1-foot subsidence of the underlying soils is estimated. Losses from site clearing and grubbing operations may affect quantity calculations and should also be taken into account. The grading contractor should verify shrinkage and earthwork yardage estimates.

10. Final site grades should be designed and constructed so that all water is diverted away from all structures and not allowed to pond on or near pavement. Drainage devices should be constructed to divert drainage from the project site.

11. It is recommended that Earth Systems Southern California (ESSC) be retained to provide engineering services during the grading, excavation, and foundation phases of development. This continuity of services will allow for the geotechnical review of the design concepts and specifications relative to the recommendations of this report and will more readily allow for design changes in the event that subsurface conditions differ from those currently anticipated.

B. Excavations

1. All excavations should be made in accordance with applicable regulations (including CAL/OSHA). Based upon the results of the site exploration, subsurface caving sands will be encountered. Therefore, there is a potential for construction problems involving caving of relatively deep site excavations (i.e. utility lines, dry wells,

swimming pools, etc.). Where such situations are encountered, lateral bracing or appropriate cut slopes should be provided. Project safety is the responsibility of the contractor and the owner. ESSC will not be responsible for project safety.

2. Open excavations may be cut vertically to a maximum depth of no more than four feet. Excavations extending between four and ten feet deep should be shored or sloped back from the base of the excavation to at least a 1.5:1 (horizontal to vertical) slope or flatter. If excavations dry out, sloughing will occur.

3. During the time excavations are open, no heavy grading equipment or other surcharge loads (i.e. excavation spoils) should be allowed within a horizontal distance from the top of any slope equal to the depth of the excavation (both distances measured from the top of the excavation slope).

4. Adequate measures should be taken to protect any structural foundations, pavements, or utilities adjacent to any excavations.

C. Utility Trenches

Standard construction techniques should be sufficient for site utility trench excavations. The surface of utility trench excavation backfill frequently settles even when backfill is placed under optimum conditions. Structural units or pavement placed over such backfill should be designed to accommodate such movements. Jetting of utility trench backfill is not recommended. There is a potential for construction problems involving caving of relatively deep site excavations.

1. Backfill of utility trench excavations within rights-of-way should be placed in strict conformance with the requirements of the governing agency. However, as a minimum it is recommended that utility trench excavation backfill should be moisture conditioned and be uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. To aid in the compaction operation, utility trench excavation backfill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

2. The provisions of this report relative to minimum compaction standards should govern utility trench excavation backfill within the project boundary. In general, service trench line excavations extending inside the site should be backfilled with native soils that have been moisture conditioned and uniformly compacted to at least 90% of maximum dry density using mechanical compaction equipment. To aid in the compaction operation, utility trench excavation backfill should be placed in maximum six-inch compacted lifts. **Compaction should be verified by testing.**

3. Backfill operations should be reviewed and tested by the geotechnical engineer's representative to verify conformance with these recommendations.

D. Foundations

1. It is recommended that any building or structure constructed on this site be designed to at least the minimum standards for Seismic Zone 4 as designated by the latest edition of the governing Building Code. The following Table is a summary of the estimated seismic parameters typically required for structural design per the 2001 California Building Code (CBC).

TABLE III
Summary of Seismic Parameters

Seismic Zone	4
Seismic Source Type (2001 CBC Table 16-U) *San Andreas Fault (≈ 5 km)	A*
Subgrade Classification (2001 CBC Table 16-J)	S_C
Seismic Zone Factor "Z" (2001 CBC Table 16-I)	0.4
Seismic Coefficient - C_a (2001 CBC Table 16-Q)	$0.40N_a$
Seismic Coefficient - C_v (2001 CBC Table 16-R)	$0.56N_v$
Near Source Factor - N_a (2001 CBC Table 16-S)	1.2
Near Source Factor - N_v (2001 CBC Table 16-T)	1.6

2. Foundations for the proposed structures should be supported by compacted soils prepared as recommended in Section A. of this report.

3. Excavations for foundations should be cleaned of all loose or unsuitable soils and debris prior to placement of concrete. **Soil generated from the foundation excavations should not be placed below the floor slab unless properly moisture conditioned and compacted.**

4. Continuous (wall, strip or perimeter) foundations for the proposed project structures may be proportioned for the following values:

   a. Design Values: An allowable "net" bearing capacity of 2,000 p.s.f. can be utilized for dead and sustained live loads. This value includes a minimum safety factor of three, and may be increased by 1/3 for total loads, including seismic forces.

   b. Continuous foundations should be embedded a minimum of 12 inches below the lowest adjacent soil grade for single-story structures, 18 inches for two-story structures, and be a minimum of one foot in width. Actual depth, width, and reinforcement requirements for continuous foundations will be dependent on the Expansion Index of the bearing soils (Refer to Section G of Recommendations), applicable sections of the governing building code, and requirements of the structural engineer.

   c. The allowable bearing capacity for continuous foundations may be increased by 200 psf for each additional six inches of foundation depth and 200 psf for each additional one foot of foundation width. The allowable bearing capacity should not exceed 3,000 p.s.f. for continuous foundations to keep estimated settlements within allowable limits.

5. Isolated pad (column or pier) foundations for the proposed project structures may be proportioned for the following values:

   a. Design Values: An allowable "net" bearing capacity of 2,500 p.s.f. can be utilized for dead and sustained live loads. This value includes a minimum safety factor of three, and may be increased by 1/3 for total loads, including seismic forces.

   b. Isolated pad foundations should be embedded a minimum of 12 inches below the lowest adjacent soil grade for single-story structures, 18 inches for two-story structures, and be a minimum two feet in width. Actual depth, width, and reinforcement requirements for isolated pad foundations will be dependent on the Expansion Index of the bearing soils (Refer to Section G of Recommendations), applicable sections of the governing building code, and requirements of the structural engineer.

   c. The allowable bearing capacity for isolated pad foundations may be increased by 200 psf for each additional six inches of foundation depth and 200 psf for each additional one foot of foundation width. The allowable bearing capacity should not exceed 3,500 p.s.f. for continuous foundations to keep estimated settlements within allowable limits.

6. Friction acting along the foundation base may provide resistance to lateral loading. The coefficient of friction was estimated to be 0.38 for site soils recompacted to approximately 90% of maximum dry density as determined by ASTM D 1557 test methods, and may be used with dead loads. This value includes a reduction factor of 1/3. This value may be increased by 1/3 for total loads, including seismic forces.

7. Additional resistance to lateral loading may be provided by passive earth pressure acting against the sides of foundations or grade beams. This pressure was estimated to be 370 Z PSF, where Z = Depth (in feet) below the finished ground elevation. In passive pressure calculations, the upper one-foot of soil should be subtracted from the depth, Z, unless confined by pavement or slab. The resisting pressure provided is an ultimate value. An appropriate factor of safety should be used for design calculations (minimum of 1.5 recommended). Passive and frictional resistance can be combined without reduction.

E. Slab-on-Grade Construction

1. Interior building concrete slab-on-grade construction should be supported by a minimum 48-inch uniform thickness of compacted soils prepared as recommended in Section A. 4. a. of this report (42 inches of excavated and recompacted soils and

6 inches of scarified and recompacted soils). Prior to placement of any slab reinforcement, moisture retarder, or sand material, all slab-on-grade subgrades (both interior and exterior) should be reviewed and tested for the required compaction and uniformity of conditions. **Compaction should be verified by testing.**

2. Exterior concrete slab-on-grade construction should be supported by at least 12 inches of compacted soils, uniform in thickness, prepared as recommended in Section A. 5. of this report (6 inches of excavated and recompacted soils and 6 inches of scarified and recompacted soils). Where slabs will extend over utility trench excavations, observation and testing of the trench backfill should be performed to confirm the compaction and uniformity of conditions of the utility trench excavation backfill. **Compaction should be verified by testing.**

3. In areas of moisture sensitive floor coverings, an appropriate vapor retarder should be installed in order to minimize vapor transmission from the subgrade soil to the slab. The vapor retarder should be evaluated for holes and/or punctures, and the edges overlapped and taped, prior to placement of concrete. Any holes or punctures observed should be properly repaired. The retarder should be covered with two inches of sand to help protect it during construction. The sand should be lightly moistened just prior to placing the concrete.

4. Reinforcement of slab-on-grade construction is contingent upon the structural engineer's recommendations and the Expansion Index of the supporting soils. Since the mixing of fill soils with native soils could change the Expansion Index, additional tests should be conducted during rough grading to determine the expansion characteristics of the new subgrade soils. It is recommended that <u>all interior and exterior</u> concrete slab-on-grade be reinforced with at least #3 bars on 18-inch centers. **Reinforcement should be placed at mid-depth of the slab.** Additional reinforcement may be required once the final expansion potential of the subgrade soils is known. The structural engineer may also require additional slab-on-grade reinforcement.

5. It should be realized that as a field manufactured project, concrete will crack even under ideal conditions. It is ESSC's experience that concrete shrinkage is more pronounced in the Antelope Valley area due to environmental conditions (high winds, low humidity, and large daily temperature differentials). The use of high slump concrete for foundations and slabs on this project will increase the occurrence and magnitude of shrinkage cracks. It is recommended that the project developers consult with project concrete contractors and concrete suppliers to formulate appropriate mix designs, placement procedures, and concrete curing procedures in an attempt to reduce the occurrence and magnitude of concrete shrinkage cracking.

6. Cracks that develop in concrete slab-on-grade should be filled and sealed prior to placing floor coverings. Frequent control joints should be incorporated into the slab construction, particularly in the areas of re-entrant corners, to help control cracking.

7. Relatively impervious floor coverings (i.e. vinyl, linoleum, etc.) that cover concrete slab-on-grade may block the passage of moisture vapor through the slab, which could result in damage to the floor covering. It is suggested that after the concrete has sufficiently cured, the slab surface be sealed with a commercial sealant prior to placing the floor covering. The compatibility and recommendations for placing of the concrete sealer, mastic, and floor covering should be verified by the floor covering manufacturer prior to sealing the concrete or placing of the floor covering.

8. It is recommended that the proposed exterior perimeter slabs (sidewalks, patios, walkways, etc.) be designed to be relatively independent of foundation stems (free-floating) to help mitigate cracking due to foundation settlement and/or expansion. Frequent joint spacing should be incorporated into concrete slab-on-grade construction, particularly in the areas of re-entrant corners, to help control cracking.

9. Subgrade soils for all concrete slab-on-grade construction should be moisture conditioned to at least optimum moisture content to a depth of at least six inches below the lowest adjacent soil grade within 24-hours prior to placement of concrete. Measures should be taken to maintain optimum moisture until concrete is placed. Actual depths of pre-moistening will be dependent upon the actual Expansion Index of the subgrade soils.

F. Lateral Earth Pressures

1. Based upon analyses, the following lateral earth pressures may be used in the design of any proposed retaining walls or similar structures:

	Driving Earth Pressure*	Resisting Earth Pressure*
Well drained level soil	40	370***
Well drained 2:1 backfill soil	63	
At-rest (restrained wall)	61**	

*Equivalent fluid pressure (PSF) per foot of soil height.

**For purposes of design, a wall is considered restrained if it is prevented from movement greater than 0.002H (H = height of wall in feet) at the top of the wall.

***The upper one-foot of soil should be subtracted from the depth, Z, unless confined by pavement or slab.

NOTE: The pressures recommended above were based on the assumption that the on site soils will be compacted to approximately 90% of maximum dry density. The use of select granular fill may reduce the recommended driving earth pressure. The resisting pressure provided is an ultimate value. An appropriate factor of safety should be used for design calculations (minimum of 1.5 recommended). Frictional and passive resistance may be combined without reduction.

2. Friction acting along the foundation base may provide resistance to lateral loading. The coefficient of friction was estimated to be 0.38 for site soils recompacted to approximately 90% of maximum dry density as determined by ASTM D 1557 test procedures, and may be used with dead loads. This value includes a reduction factor of one-third. This value may be increased by 1/3 for total loads, including seismic forces. Frictional and passive resistance may be combined without reduction.

3. The lateral earth pressure to be resisted by retaining walls should be increased to allow for surcharge loads. The surcharge considered should include the loads from any structures or vehicle traffic within a distance approximately equal to the height of the retaining wall.

4. Backfill immediately behind any retaining structure should be a free-draining granular material. Comments on the characteristics of import soils will be given by the geotechnical consultant after the material is on the project, either in place, or stockpiled in adequate quantities to complete the project.

5. Backfill behind retaining walls should be with soils that have been properly moisture conditioned to approximately optimum moisture content and uniformly compacted to at least 90% of maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. **Compaction should be verified by testing.** To aid in the compaction operation, retaining wall backfill should be placed in maximum six-inch compacted lifts.

6. Compaction within the area of a 1:1 slope from the bottom of wall excavations should be performed by hand operated compaction equipment. This is intended to reduce potential "locked-in" lateral pressures caused by compaction with heavy grading equipment.

7. Weepholes, backdrains, or an equivalent system of backfill drainage should be incorporated into the retaining wall design (see Plate C-I, Appendix C, for backdrain details). Waterproofing of retaining walls should be provided to help reduce the potential for efflorescent formation.

8. The final grade should be such that all water is diverted away from the retaining wall's foundation or backfill.

G. Expansive Soil

The Expansion Index (ASTM D 4829) of the subgrade soils should be considered when designing foundations. As stated in the Soil Conditions section, the preliminary Expansion Index determination of the on-site soils is in the "very low" (0-20) classification. The foundation and slab-on-grade design recommendations provided in Sections D and E of this report include generally used guidelines in the Quartz Hill area for foundation design for soils with the indicated degree of expansiveness. These recommendations are minimum and comply with normally accepted geotechnical engineering practices. **However, actual foundation and slab-on-grade construction reinforcement should be determined by the structural engineer based upon site specific conditions such as foundation loading and engineering characteristics of the subgrade soils.**

If the site soils are thoroughly mixed and/or additional fill is added during site preparation, the expansion potential may change. The expansion potential of the new subgrade soils should be determined after the site preparation has been completed, and the final foundation design adjusted accordingly.

H. Preliminary Pavement Sections

No "R"-Value tests were conducted for this report. During site grading, sample(s) should be secured from the exposed pavement subgrade areas, tested, and evaluated for review or revision of the following preliminary pavement sections. Based upon "R"-Value test results obtained from development of adjacent sites (design "R"-Value = 45), the following sections may be used for developing preliminary earth quantities and paving cost estimates:

Asphalt Concrete Pavement Sections

Traffic Index 5.0 (Automobile and Light Truck Parking and Drive Lanes)

3.5" Asphalt Concrete on
4.0" Crushed Aggregate Base or equivalent

Traffic Index 7.0 (Avenue M-2)

4.0" Asphalt Concrete on
6.0" Crushed Aggregate Base or equivalent

Asphalt concrete pavement section recommendations are based on the assumption that the pavement section is placed on a minimum 12 inch thick layer of subgrade compacted as recommended in Section A. 5. of the Recommendations of this report. Aggregate base material should be properly moisture conditioned and compacted to at least 95% of the maximum dry density as determined by ASTM D 1557 test procedures using mechanical compaction equipment. Pavement sections should be verified with the jurisdictional authority prior to the time of construction.

Portland Cement Concrete Pavement Sections

1. It is recommended that no less than a six-inch (6") thick Portland Cement Concrete (P.C.C) section should be considered for design of the proposed traffic bearing pavement sections for this project (Portland Cement Association - Pacific Southwest Region, "Portland Cement Concrete Pavement Design For Light, Medium & Heavy Traffic", Third Printing, 1981). The concrete should have a minimum 28-day Modulus of Rupture of 500 psi (approximately 3,000 psi compressive strength). It is recommended that air entrainment of the concrete be provided.

2. The use of distributed steel in the pavement section is not required by the above structural pavement design, however, steel reinforcement, a minimum of #4 bars on 24 inch centers, is recommended to help control the effects of shrinkage and temperature cracking. **Reinforcement should be placed at mid-depth of the slab.** Steel reinforcement should not be carried across longitudinal or transverse joints.

3. Transverse contraction joints should be spaced no further than 12 feet apart. Transverse joints should be cut to a depth of 1/4 of the thickness of the concrete slab plus ¼-inch by sawing or impressed plastic ribbons.

4. Longitudinal joints should be spaced no further than 12 feet apart. Longitudinal joints should be constructed full depth, or by weakening the concrete to a depth described above with a concrete saw or an impressed plastic ribbon.

5. All Portland Cement Concrete pavement sections should be placed on a minimum 12-inch thick subgrade compacted to at least 95% of maximum dry density as determined by ASTM D 1557 test procedures as recommended in Section A 5 of the Recommendations of this report.

I. Soil Chemical Testing

1. The results of soil chemistry tests performed on a sample of the near surface soils are included in Appendix B of this report. This information should be utilized by the design engineers for their interpretation pertaining to the reactivity of various construction materials (such as concrete and piping) with the soils.

2. It is recommended that Type II Portland Cement be used in the concrete for the proposed foundations, slab-on-grade, and drainage structures of this project.

3. Tests should be conducted during grading operations to verify the soil chemistry of the subgrade soils, especially if the soils are thoroughly mixed and additional fill is added during site preparation.

J. Slope Stability

Slope stability calculations were not performed because of anticipated minimal slope heights. If slope heights exceed five feet, engineering calculations should be performed to substantiate the stability of cut or fill slopes. Fill slopes should be constructed to a gradient not exceeding 2 horizontal to 1 vertical and should be overfilled and trimmed back to compacted material.

CLIENT OPTIONAL SERVICES

This report was based on the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to check conformance with the recommendations of this report. Maintaining ESSC as the geotechnical engineering consultant from beginning to end of this project will help provide continuity of services. The recommended services include, but are not necessarily limited to, the following:

a. Consultation as required during the final design stages of the project.

b. Review of grading and/or building plans.

c. Observation and testing during site preparation, grading, placement of engineered fill, and backfill of utility trenches.

d. Consultation as required during construction.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The conclusions and recommendations submitted in this report relative to the proposed development are based, in part, upon the data obtained from two (2) exploratory soil borings, site observations during the field exploration operations, and past experience. The nature and extent of variations between subsurface soil conditions may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

In the event of any change in the assumed nature or design of the proposed project as planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing. This report is issued with the understanding that it is the responsibility of Yabito Corporation, or of their representatives, to insure that the information and recommendations contained in this report are called to the attention of the architects and engineers for the project and incorporated into the plan. It is also the responsibility of Yabito Corporation, or of their representatives, to insure that the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

As the geotechnical engineers for this project ESSC strives to provide our services in accordance with generally accepted geotechnical engineering practices in this community at this time. No warranty or guarantee is expressed or implied. This report was prepared for the exclusive use of Yabito Corporation, or of their authorized agents.

It is recommended that ESSC be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design specifications. If ESSC is not accorded the privilege of making this recommended review, ESSC can assume no responsibility for misinterpretation of the recommendations contained in this report.

The scope of ESSC's current services for this report did not include any environmental assessment or investigation for the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater or air, on or below or around the site.

The statements contained in this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the conclusions of this report may be invalidated, wholly or partially, by changes outside of ESSC's control, and should therefore be reviewed after one year.

CLOSURE

Earth Systems Southern California trusts this report is sufficient at this time and meets your current needs and appreciates this opportunity to provide professional geotechnical engineering services for this project. If you have any questions regarding the information contained in this report, or if you require additional geotechnical engineering services, please contact us.

Respectfully submitted,

Earth Systems
Southern California

REGISTERED PROFESSIONAL ENGINEER
TIM S. THOMSON
No. C065661
EXP. 9-30-07
CIVIL
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Tim Thomson
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Exp. 12/31/08
GEOTECHNICAL
STATE OF CALIFORNIA

APPENDIX A

Site Plan & Vicinity Map

Boring Logs

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNTOF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGAINC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM

Proposed Warehouse/Auto Repair Facility
Quartz Hill, California

Earth Systems
Southern California

12/28/06 PL-06948-01

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE GRAINED SOILS

(Major Portion Retained on Number 200 Sieve)

Includes clean gravels and sands described as fine, medium or coarse, depending on distribution of grain sizes, and silty or clayey gravels and sands, condition is rated according to laboratory tests or estimated from resistance to sampler penetration.

Penetration Resistance* California Split Spoon (CSS) Blows/Ft		Penetration Resistance* Standard Pentrometer (SPT) Blows/Ft
0-5	Very Loose	0-4
5-15	Loose	5-10
15-40	Medium Dense	11-30
40-70	Dense	31-50
>70	Very Dense	>50

Fine Grained Soils

(Major Portion Passing the Number 200 Sieve)

Includes inorganic and organic silts and clays, gravelly, sandy or silty clays, and clayey silts. Consistency is rated according to laboratory tests or estimated from resistance to sampler penetration.

Penetration Resistance* California Split Spoon (CSS) Blows/Ft		Penetration Resistance* Standard Pentrometer (SPT) Blows/Ft
0-2	Very Soft	0-2
2-5	Soft	2-4
6-10	Medium Stiff	5-8
11-18	Stiff	9-15
19-36	Very Stiff	16-30
>36		>30

* Penetration resistance based on a 140 pound hammer falling approximately 30 inches.

Apparent Density/Consistency of Soil	
Proposed Warehouse/Auto Repair Facility Quartz Hill, California	
Earth Systems Southern California	
12/28/06	PL-06948-01

SYMBOLS COMMONLY USED ON BORING LOGS

Modified California Split Barrel Sampler

Modified California Split Barrel Sampler - No Recovery

Standard Penetration Test (SPT) Sampler

Standard Penetration Test (SPT) Sampler - No Recovery

Perched Water Level

Water Level First Encountered

Water Level After Drilling

Pocket Penetrometer (tsf)

Vane Shear (ksf)

1. The location of borings were approximately determined by pacing and/or siting from visible features. Elevations of borings are approximately determined by interpolating between plan contours. The location and elevation of the borings should be considered

2. The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tides, temperature, and other factors at the time measurements were made.

BORING LOG SYMBOLS

Proposed Warehouse/Auto Repair Facility
Quartz Hill, California

Earth Systems
Southern California

11/28/06	PL-06948-01

Earth Systems
Southern California
1024 West Avenue M-4, Palmdale, CA
(661) 948-7538/ (661) 948-7963 fax

Boring No: B-1
Project Name: Proposed Warehouse/Auto Repair Facility
Project Number: PL-06948-01
Boring Location: Per Plan

Drilling Date: October 31, 2006
Drilling Method: 8" Hollow Stem
Drill Type: Mobil B-51
Logged By: Rob Ferguson

Depth (Ft.)	Sample Type	Penetration Resistance (Blows/6")	Symbol	USCS	Dry Density (pcf)	Moisture Content (%)	DESCRIPTION OF UNITS
0	Bulk, MOD Calif.	3,8		SM	102	2.5	Moderate Brown Silty Fine to Coarse Sand with Gravel, Dry, Loose.
	Bulk, MOD Calif.	7,9		SM	111	4.8	Moderate Brown Silty Fine to Medium Sand, Slightly Moist, Medium Dense.
5	MOD Calif.	20,29		SM	115	6.4	Light Moderate Brown Silty Fine to Coarse Sand with Slight Gravel to 1/2", Slightly Moist, Dense.
	MOD Calif.	14,18		SM	123	4.5	Light Moderate Brown Silty Fine to Coarse Sand with Slight Gravel to 3/8", Slightly Moist, Medium Dense.
10	MOD Calif.	6,10		SM	117	5.6	Moderate Brown Silty Fine to Coarse Sand with Slight Gravel to 3/4", Slightly Moist, Medium Dense.
15	MOD Calif.	16,32		SM	125	11.9	Moderate Brown Silty Fine to Coarse Sand with Slight Clay, Moist, Dense.
20	MOD Calif.	50 for 6"		BX	120	3.5	Moderate Brown Schist Bedrock, Severly to Completely Weathered.
30	MOD Calif.	50 for 4"			****	1.5	
35							

Total Depth = 30.5 feet.

No free groundwater was encountered at time of drilling.

Bedrock encountered at a depth of approximately 18.6 feet.

Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradational.

Earth Systems
Southern California

1024 West Avenue M-4, Palmdale, CA
(661) 948-7538/ (661) 948-7963 fax

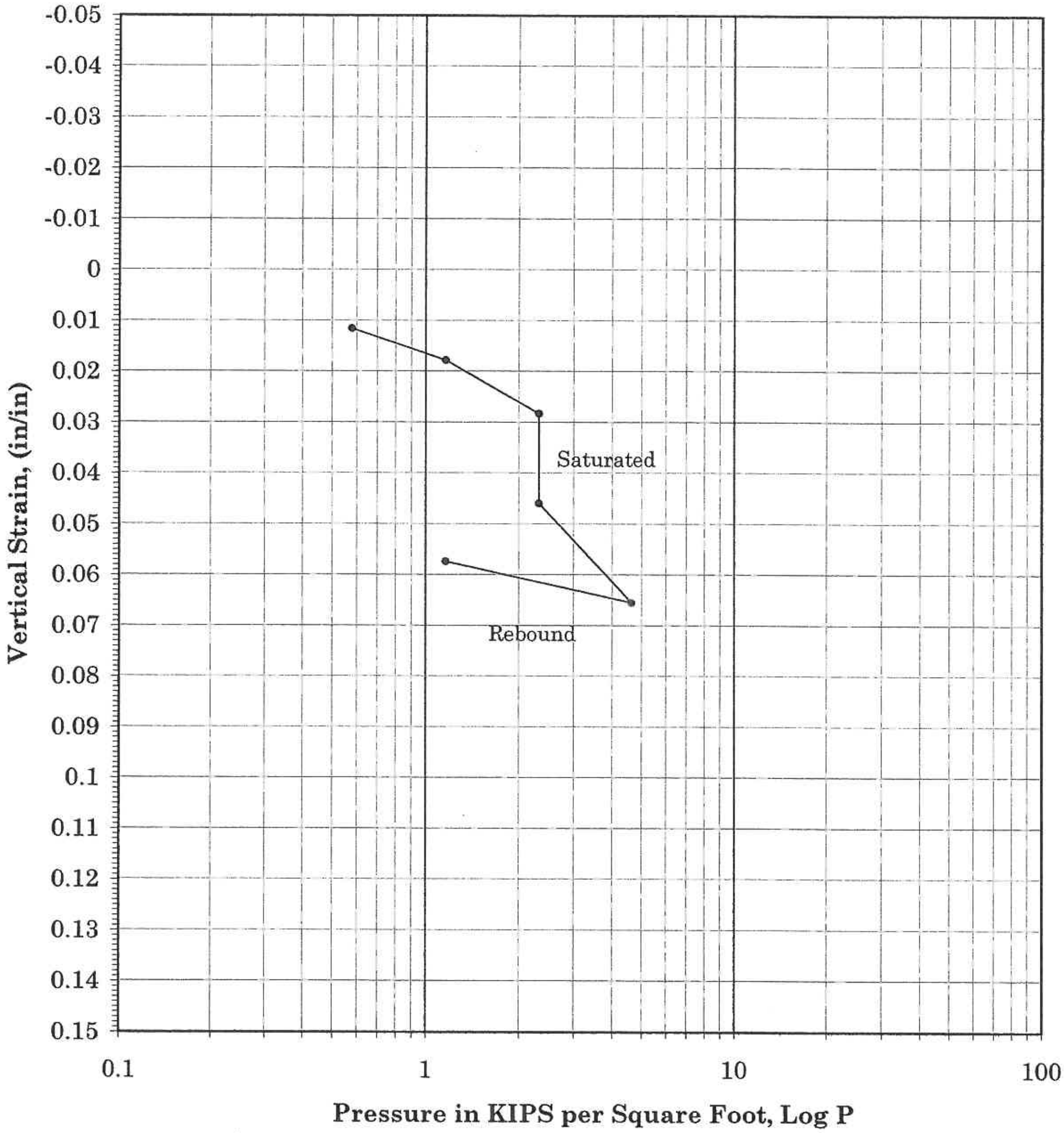
Boring No: B-2	Drilling Date: October 31, 2006
Project Name: Proposed Warehouse/Auto Repair Facility	Drilling Method: 8" Hollow Stem
Project Number: PL-06948-01	Drill Type: Mobil B-51
Boring Location: Per Plan	Logged By: Rob Ferguson

DESCRIPTION OF UNITS

Depth (Ft.)	Sample Type (Bulk / SPT / MOD Calif.)	Penetration Resistance (Blows/6")	Symbol	USCS	Dry Density (pcf)	Moisture Content (%)	Description of Units
0				SM			Moderate Brown Silty Fine to Coarse Sand with Gravel to 3/4", Slightly Moist, Loose.
		4,9			105	4.1	
		8,23		SM	108	6.2	Moderate Brown Silty Fine to Coarse Sand, Slightly Moist, Medium Dense.
5		28,31		SM	122	8.4	Light Moderate Brown Silty Fine to Coarse Sand with Slight Gravel to 1/2", Moist, Dense.
				SM			Light Moderate Brown Silty Fine to Coarse Sand with Slight Gravel to 1", Slightly Moist, Medium Dense.
10		6,11			109	3.7	
				BX			Moderate Brown Schist Bedrock, Severly to Completely Weathered.
15		50 for 2"					
20							Total Depth = 15.3 feet. No free groundwater was encountered at time of drilling. Bedrock encountered at a depth of approximately 13.5 feet. Note: The stratification lines shown represent the approximate boundaries between soil and/or rock types and the transitions may be gradational.
25							

APPENDIX B

Summary of Laboratory Test Results



Sample Location: Boring 2@4'

Material: Silty Fine to Coarse Sand (SM)

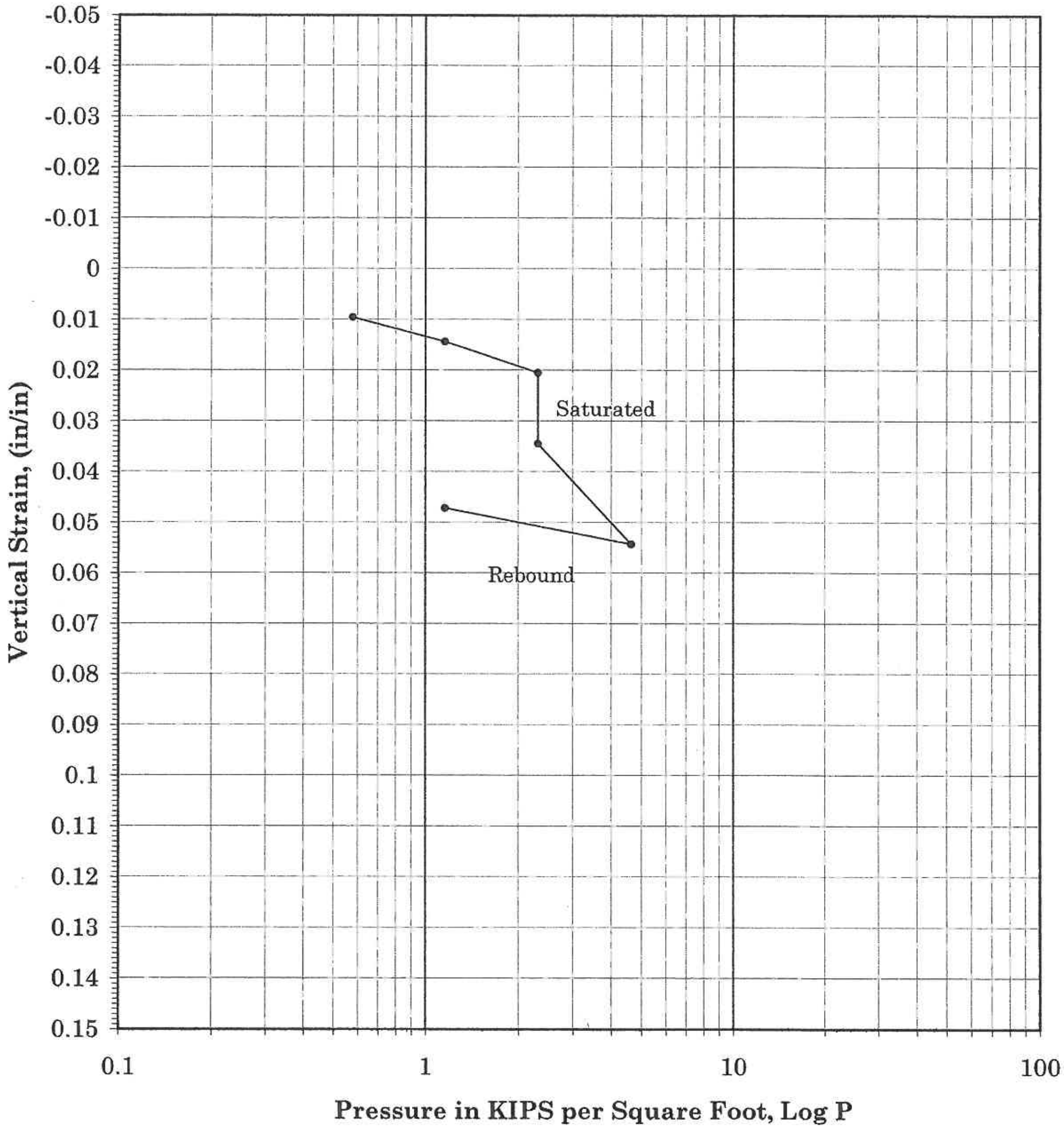
Initial Dry Density: 108.0 PCF

Moisture Content: 6.2%

Percent Hydroconsolidation: 1.8%

* Test Method: ASTM D-2435

Consolidation Test	
Proposed Warehouse/Auto Repair Facility Quartz Hill, California	
Earth Systems Southern California	
12/28/2006	PL-06948-01



Consolidation Test
Proposed Warehouse/Auto Repair Facility Quartz Hill, California
Earth Systems Southern California

Sample Location: Boring 1@5'

Material: Silty Fine to Coarse Sand with Gravel (SM)

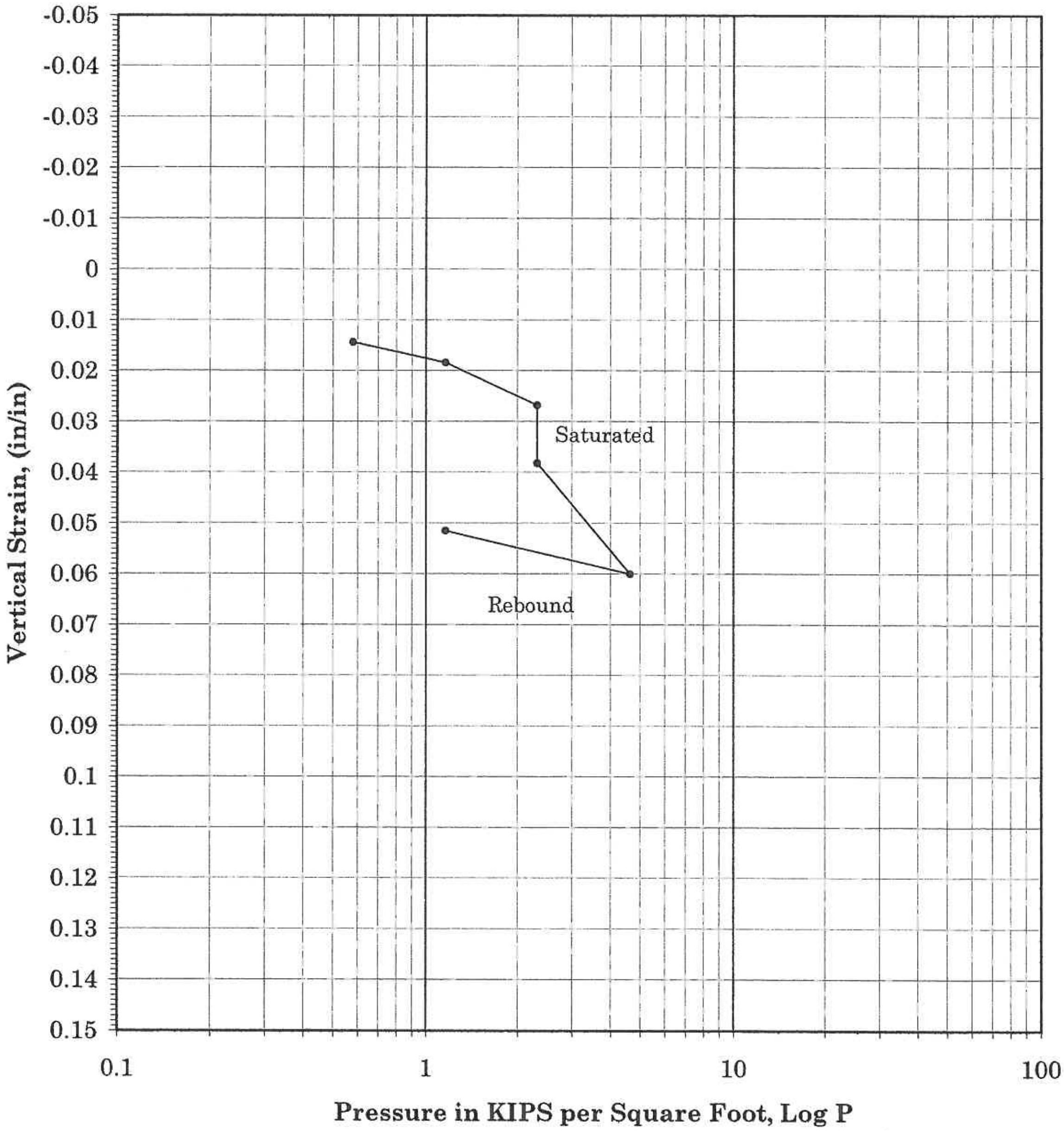
Initial Dry Density: 115.0 PCF

Moisture Content: 6.4%

Percent Hydroconsolidation: 1.4%

* Test Method: ASTM D-2435

12/28/2006	PL-06948-01



Sample Location: Boring 1@10'

Material: Silty Fine to Coarse Sand with Gravel (SM)

Initial Dry Density: 117.0 PCF

Moisture Content: 5.6%

Percent Hydroconsolidation: 1.1%

* Test Method: ASTM D-2435

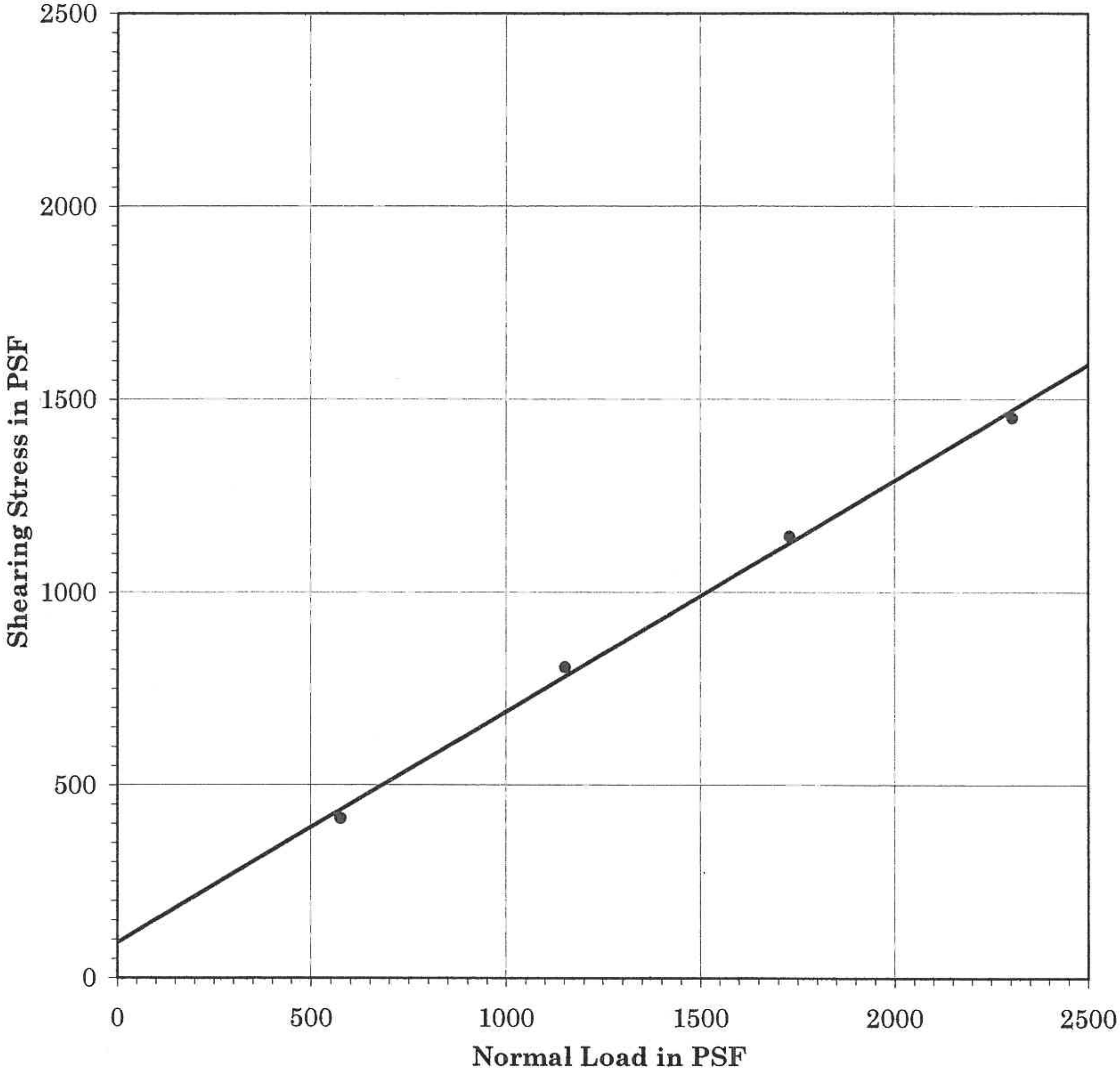
Consolidation Test

Proposed Warehouse/Auto Repair Facility

Quartz Hill, California

Earth Systems
Southern California

12/28/2006	PL-06948-01



DIRECT SHEAR DATA*

Sample Location: Boring 1 @ 0-5', Remolded

Material: Silty Fine to Coarse Sand with Gravel (SM)

Dry Density (pcf): 117

ϕ Angle of Friction (degrees): 31

c Cohesive Strength (psf): 90

Test Type: Residual

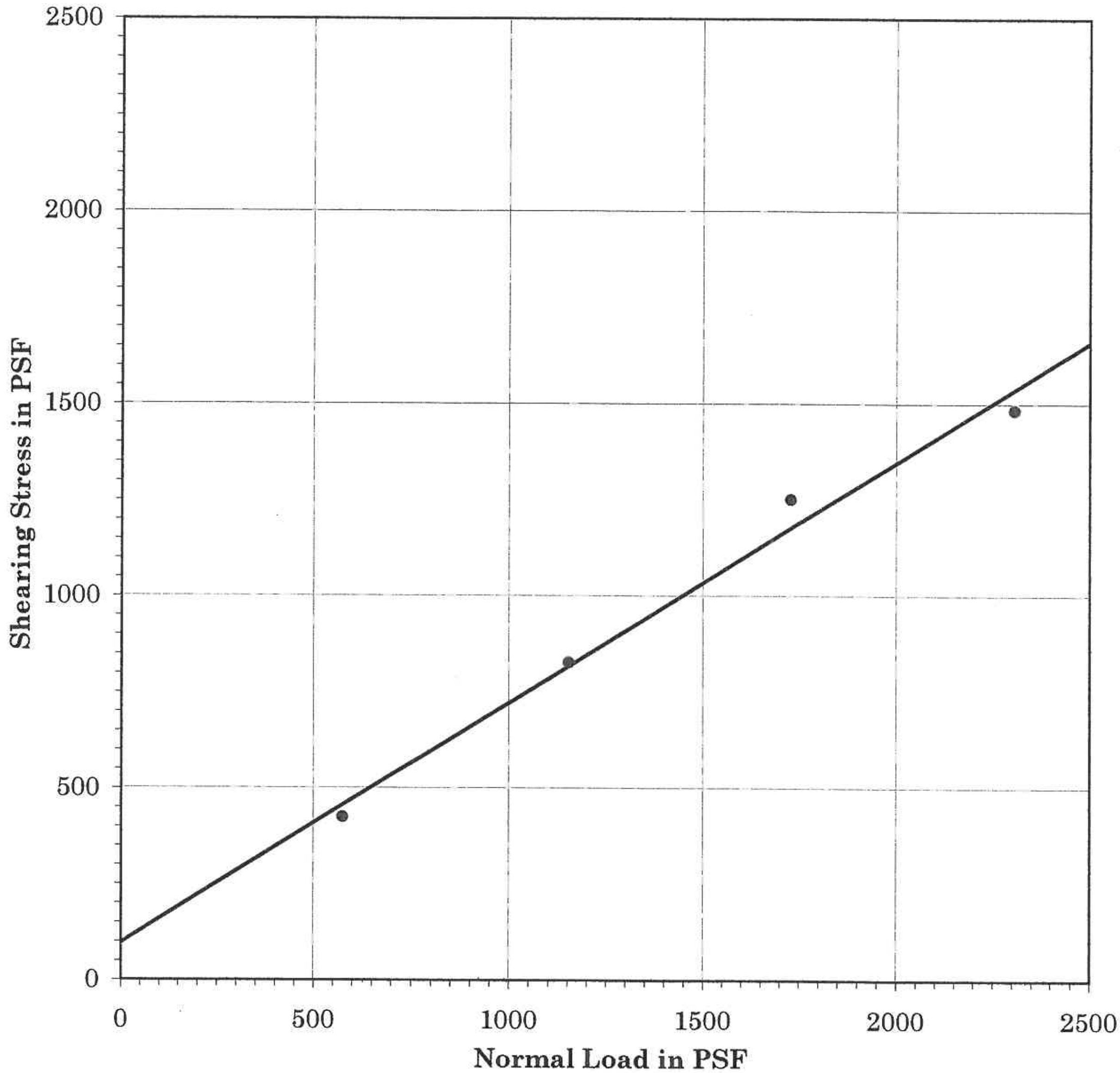
* Test Method: ASTM D-3080

DIRECT SHEAR TEST

Proposed Warehouse/Auto Repair Facility
Quartz Hill, California

Earth Systems
Southern California

12/28/2006	PL-06948-01



DIRECT SHEAR DATA*

Sample Location: Boring 1 @ 3', in-situ
Material: Silty Fine to Medium Sand (SM)
Dry Density (pcf): 111
ϕ Angle of Friction (degrees): 32
c Cohesive Strength (psf): 100
Test Type: Residual

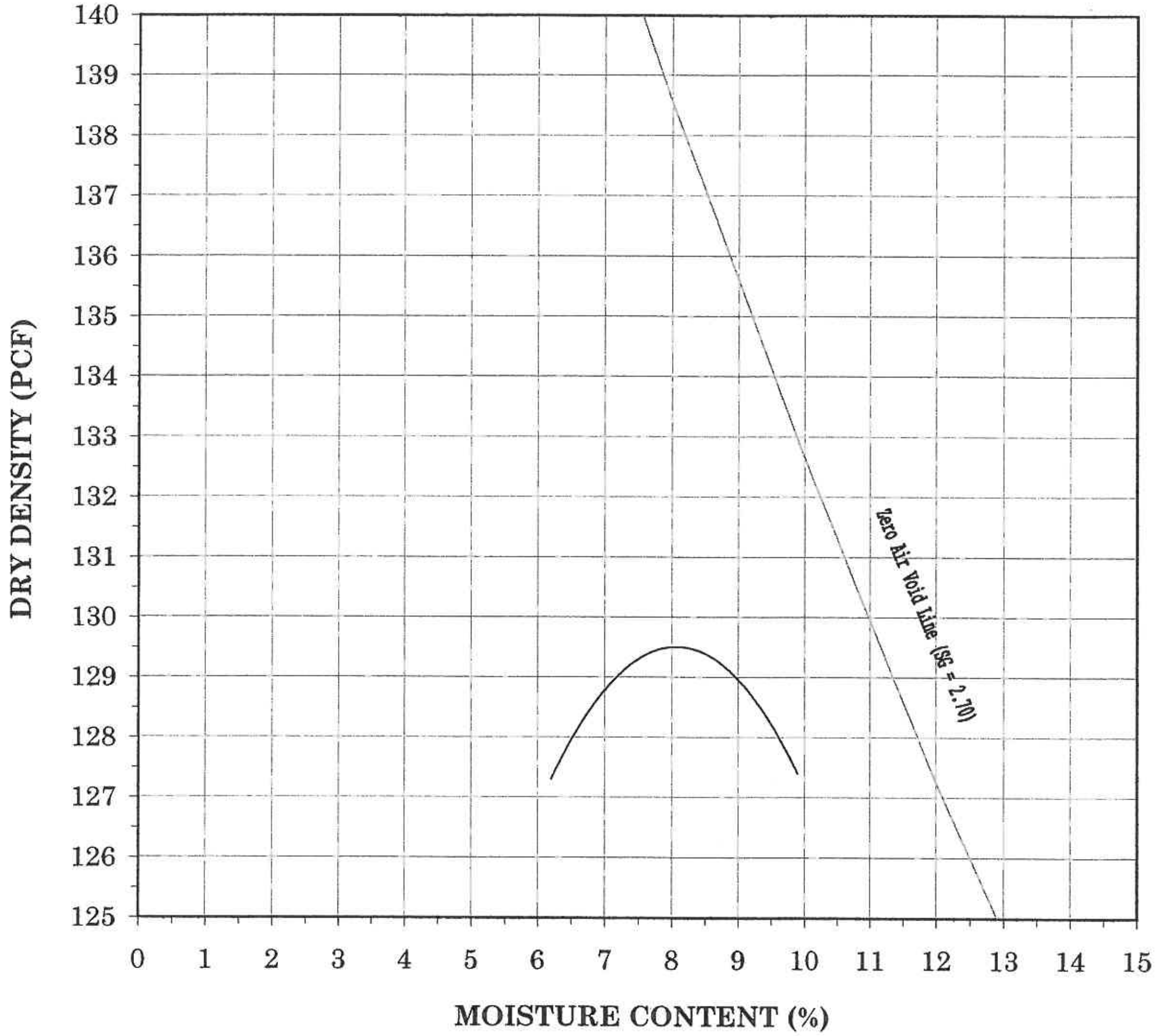
* Test Method: ASTM D-3080

DIRECT SHEAR TEST

Proposed Warehouse/Auto Repair Facility
Quartz Hill, California

Earth Systems
Southern California

12/28/2006	PL-06948-01



Maximum Density - Optimum Moisture Characteristics*

Sample Location: Boring 1 @ 0-5'

Material: Silty Fine to Coarse Sand with Gravel (SM)

Maximum Density (pcf): 129.5

Optimum Moisture: 8.0%

* Test Method: ASTM D-1557

MAXIMUM DENSITY - OPTIMUM MOISTURE	
Proposed Warehouse/Auto Repair Facility Quartz Hill, California	
Earth Systems Southern California	
12/28/2006	PL-06948-01

TABLE B-I

SUMMARY OF EXPANSION INDEX* TESTING

Sample Location	Material Description	Expansion Index	Expansion Potential
Boring #1 @ 0-5 feet	Silty Sand (SM)	0	Very Low

*ASTM D 4829 Test Method

Table 1 - Laboratory Tests on Soil Samples

Earth Systems, So.Ca.
Auto Shop / Warehouse, Quartz Hill, CA
Your #PL-06-948-01, SA #06-1887LAB
3-Nov-06

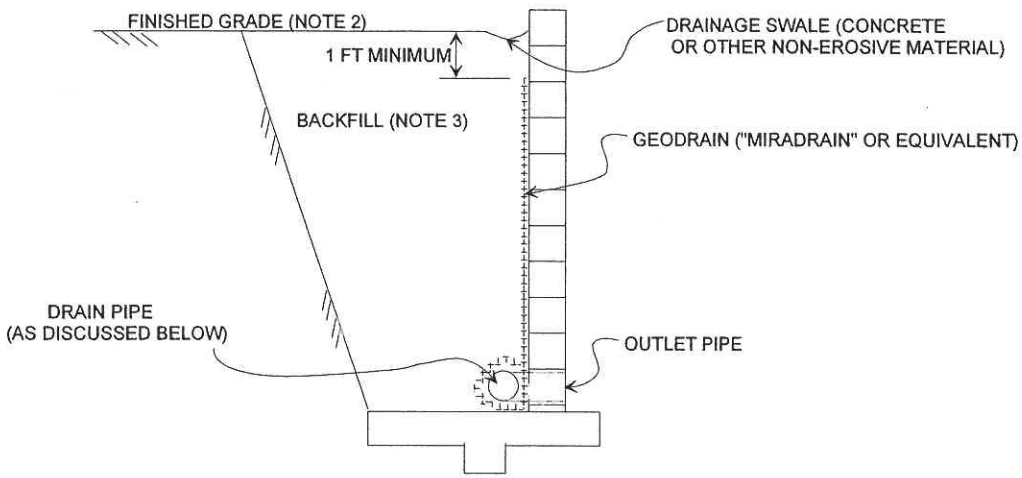
Sample ID			B2 @ 0-5' SM
Resistivity		**Units**	
as-received		ohm-cm	1,120,000
saturated		ohm-cm	10,000
pH			7.4
Electrical Conductivity		mS/cm	0.08
Chemical Analyses			
Cations			
calcium	Ca^{2+}	mg/kg	45
magnesium	Mg^{2+}	mg/kg	7.2
sodium	Na^{1+}	mg/kg	21
potassium	K^{1+}	mg/kg	18
Anions			
carbonate	CO_3^{2-}	mg/kg	ND
bicarbonate	HCO_3^{1-}	mg/kg	58
flouride	F^{1-}	mg/kg	0.7
chloride	Cl^{1-}	mg/kg	3.4
sulfate	SO_4^{2-}	mg/kg	41
phosphate	PO_4^{3-}	mg/kg	7.2
Other Tests			
ammonium	NH_4^{1+}	mg/kg	4.0
nitrate	NO_3^{1-}	mg/kg	ND
sulfide	S^{2-}	qual	na
Redox		mV	na

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

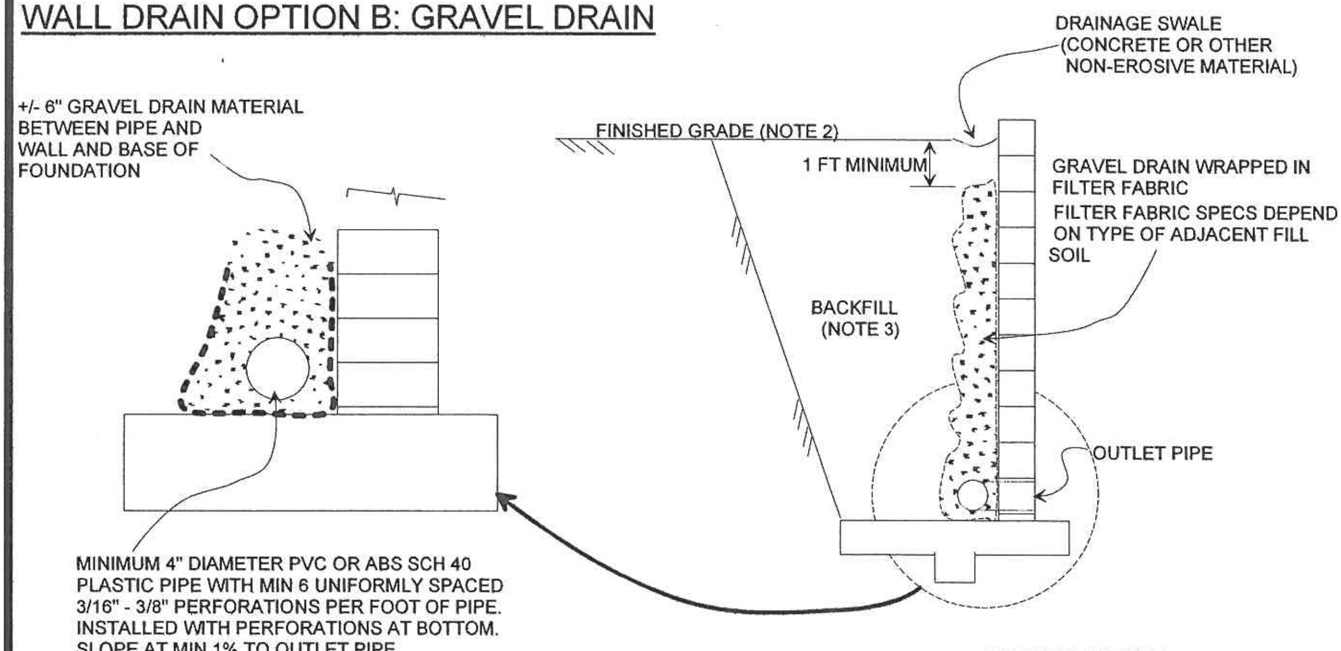
APPENDIX C

Design Plates

WALL DRAIN OPTION A: SYNTHETIC GEODRAIN



WALL DRAIN OPTION B: GRAVEL DRAIN



NOT TO SCALE

NOTE 1)

GRAVEL DRAIN MATERIAL SHALL CONSIST OF CLEAN PEA GRAVEL OR 3/8" GRAVEL WRAPPED IN APPROPRIATE FILTER FABRIC* OR CALIFORNIA CLASS II PERMEABLE MATERIAL

NOTE 2)

USE DRAINAGE SWALE OR GRADE TO DRAIN AWAY FROM WALL.

NOTE 3)

ENGINEERED BACKFILL COMPACTED AS RECOMMENDED IN GEOTECHNICAL REPORT. SPECIAL PROVISIONS WILL APPLY TO MODERATELY OR HIGHLY EXPANSIVE BACKFILL.

NOTE 4)

WEEP HOLES IN BASE BLOCK COURSE ARE RECOMMENDED. CARE SHOULD BE TAKEN THAT WEEPHOLES ARE NOT COVERED BY EXTERIOR GRADE OR PAVING..

BACKDRAIN DETAILS - EXTERIOR WALLS

Proposed Warehouse/Auto Repair Facility
Quartz Hill, California

Earth Systems
Southern California

12/28/06	PL-06948-01

Appendix D

Phase I Environmental Site Assessment

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
APN 3101-013-058
Avenue M-2, West of 50th Street West
Quartz Hill, Los Angeles County, California
PL-06948-02

Prepared For

GRIFFIN/SWINERTON VENTURE

July 29, 2014

Prepared by
Earth Systems
Southern California
1024 West Avenue M-4
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Earth Systems
Southern California

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July 29, 2014

PL-06948-02

Griffin/Swinerton Venture
c/o Griffin Structures, Inc.
385 Second Street
Laguna Beach, California 92651

Attention: Mr. Steve Mickle

Subject: **Phase I Environmental Site Assessment**
APN 3101-013-058
Avenue M-2, West of 50th Street West
Quartz Hill, Los Angeles County, California

Presented herewith is Earth Systems Southern California's Phase I Environmental Site Assessment Report prepared, as authorized, for Assessor's Parcel Number 3101-013-058, located along the south side of Avenue M-2, west of 50th Street West in Quartz Hill, Los Angeles County, California. The property currently consists of vacant undeveloped land. Earth Systems Southern California appreciates this opportunity to be of service. If you need clarification of the information contained in this report, or if we can be of additional service, please contact the undersigned.

Respectfully submitted,

Earth Systems
Southern California

T. Th

Tim Thomson
Project Manager

Distribution: 3 – Griffin/Swinerton Venture

TABLE OF CONTENTS

PHASE I
ENVIRONMENTAL SITE ASSESSMENT
APN 3101-013-058
AVENUE M-2, WEST OF 50TH STREET WEST
QUARTZ HILL, LOS ANGELES COUNTY, CALIFORNIA

SUMMARY

Historical research conducted for this assessment indicates that the property consisted of vacant undeveloped land in 1917. The property consisted of an orchard in 1928. From 1936 to 2014 the property consisted of vacant undeveloped land. According to Ms. Alleguez, counsel for Yabito Corp, when Yabito Corp. purchased the property there was an old house located on the property. However, no evidence of this structure was observed on historic topographic maps or aerial photographs reviewed for this assessment. No significant data gaps or data failures were encountered during the course of this assessment.

The property currently consists of vacant undeveloped land. Regulated quantities of hazardous materials including aboveground storage tanks (ASTs), underground storage tanks (USTs), and 55-gallon drums of chemicals were not observed to be used, stored, or disposed of on the property. No current or past uses likely to involve the use, treatment, storage, disposal, or generation of hazardous substances or petroleum products were identified during the site reconnaissance. No obvious recognized environmental conditions (RECs) were observed for the property during the recent site reconnaissance.

The subject property and adjoining parcels were not identified as hazardous materials use, storage, disposal, or release site on any of the 109 databases reviewed for this assessment. Institutional controls and engineering controls were not identified for the subject property. Oil and gas wells were not identified on the subject property. The search of regulatory lists for hazardous materials sites in the vicinity of the property did not identify any obvious potential off-site sources of contamination within the ASTM-specified approximate minimum search distance of the subject property. No obvious RECs for the property were noted from the 109 databases reviewed.

Based on the research conducted for this assessment, it is Earth Systems Southern California's (Earth Systems') opinion that one REC was identified for the subject property:

1. Historical research conducted for this study indicates that the property consisted of an orchard in 1928. It is possible that agricultural chemicals (insecticides, pesticides, and/or herbicides) were applied to the property during this time period. It is not known if any residual chemicals remain in the soil. These compounds tend to biodegrade over time, and it is Earth Systems' experience that residual concentrations of these chemicals found at similar sites are rarely discovered at levels requiring regulatory action. The subject property has consisted of vacant undeveloped land for approximately 78 years. If this is a concern, soil sampling and laboratory analysis can be conducted to determine the actual presence or absence of agricultural chemicals in the soils on the property. Some counties and/or cities require soil testing on current and/or former agricultural properties prior to approving development.

No historical RECs or controlled RECs were identified during the course of this assessment. Aside from the past agricultural use of the property, no obvious conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum and petroleum products on, at, in, or to the subject property were identified during the course of this assessment. This opinion is based on the information provided to Earth Systems during the course of this assessment. Any data that is missing or was withheld from Earth Systems could alter our opinion.

INTRODUCTION

This report presents the findings of Earth Systems' Phase I Environmental Site Assessment (ESA) conducted for the above referenced approximate 1.75-acre site located along the south side of Avenue M-2, west of 50th Street West in Quartz Hill, Los Angeles County, California. The property is identified as Assessor's Parcel Number (APN) 3101-013-058, and currently consists of vacant undeveloped land.

The purpose of this assessment is to permit the client to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability. This assessment is intended to constitute "all appropriate inquiry (AAI) into the previous ownership and uses of the property consistent with good commercial or customary practice as defined in CERCLA, 42 U.S.C.§9601(35)(B)". AAI is only the first step to establishing the ability to qualify for CERCLA liability protection – "continuing obligations" apply after purchase.

This evaluation has been performed at your request to identify, to the extent feasible pursuant to the processes prescribed in ASTM E 1527-13, RECs in connection with the subject property. The term "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. Hazardous substances are defined pursuant to CERCLA 42 U.S.C.§9601(14), as interpreted by EPA regulations and the courts. A controlled REC is defined as "a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls". A historical REC is defined as "a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls".

Earth Systems performed this Phase I ESA for Griffin/Swinerton Venture, in accordance with ASTM Standard E 1527-13, *Standard Practice for Environmental Site Assessments*. This report is prepared for the sole use and benefit of Griffin/Swinerton Venture, and is based in part upon data provided by Griffin/Swinerton Venture and their representatives. Neither this report, nor any of the information contained herein, shall be used or relied upon for any other purpose by any person or entity other than Griffin/Swinerton Venture.

Scope of Services

Earth Systems' services were performed in accordance with the proposal dated July 11, 2014 and in general conformance to the guidelines presented in ASTM Standard E 1527-13, *Standard Practice for Environmental Site Assessments*. Earth Systems performed the following tasks in order to identify RECs on and in the immediate vicinity of the subject site:

- Conducted a visual survey of the property to evaluate on-site hazardous materials use, storage, and disposal activities.
- Performed a visual reconnaissance of the immediately adjacent sites.
- Interviewed an owner representative "user" regarding specialized knowledge, purchase price, and commonly known information via a User Provided Information Questionnaire. The property currently consists of vacant undeveloped land, and therefore operators and occupants of the property were not interviewed during the site reconnaissance.
- Reviewed readily available literature and historic documentation for the property to determine historic site usage from the time of the property's first developed use. Historical documents prior to 1940 were reviewed when available. Documents reviewed include historic U.S.G.S. topographic maps, historic city directories, local building department records, Sanborn fire insurance maps, and historic aerial photographs.
- Reviewed 109 reasonably ascertainable regulatory agency databases concerning chemical use, storage, and disposal for the subject property and surrounding sites.
- Searched for environmental cleanup liens and activity and use limitations (AULs).
- Prepared this report presenting the findings, conclusions and recommendations.

SITE DESCRIPTION

The subject property is identified as APN 3101-013-058, and is located along the south side of Avenue M-2, west of 50th Street West in Quartz Hill, Los Angeles County, California. The approximate 1.75-acre property currently consists of vacant undeveloped land. The owner of the property is identified as Yabito Corporation. Access to the property is made from Avenue M-2. The surrounding land uses in the immediate vicinity of the property are a mix of residential, commercial, and vacant land (see Plates I, II, and III: Vicinity Map, Site Sketch, and Aerial Photograph, respectively).

The property is identified as a portion of the northeast quarter of Section 2, Township 6 North, Range 13 West, San Bernardino Base Meridian. The elevation of the property is approximately 2,510 feet above sea level. The property is relatively flat, with an overall downward gradient towards the north (U.S.G.S. Topographic Map, Lancaster West Quadrangle, 1974).

Hydrology

Specific depth to groundwater information was not available for the property. Wells were not observed on the property during the recent site reconnaissance. Depth to groundwater was measured at 194.8 feet below the ground surface (bgs) on March 1, 2005 in a well located approximately 2.5-miles north-northeast of the property (Los Angeles County Hydrologic Records). The regional groundwater aquifer in the Quartz Hill area, which supplies water to the Antelope Valley, is estimated to be between 200 and 300 feet bgs. In the absence of reported groundwater flow direction information, it is assumed that groundwater follows surface topography, and flows towards the north.

The property is not located within the bounds of a 100- or 500-year flood zone. The property is not identified as a wetland area on the National Wetland Inventory (EDR Inquiry Number 4004674.2s).

SITE RECONNAISSANCE

A field reconnaissance of the site was conducted by Robert Ferguson, Staff Geologist, on July 23, 2014. Mr. Ferguson is an Environmental Professional with a Bachelor of Science degree in geology, who has over fourteen (14) years experience conducting site reconnaissances for Phase I ESAs. The property was visually and/or physically observed by driving along the perimeter and walking through the property. Photographs of the subject property are included in Appendix A. The following observations were made:

The subject site consists of the approximately 1.75 acres of vacant undeveloped land located along the south side of Avenue M-2, west of 50th Street West. The property is identified as APN 3101-013-058. Access to the property is made from Avenue M-2. The surrounding land uses in the vicinity of the property are a mix of residential, commercial, and vacant land.

Regulated quantities of hazardous materials including ASTs, USTs, and 55-gallon drums were not observed to be used, stored, or disposed of on the property. Waste management and solid waste disposal activities were not observed on the property. A pile of trash and debris including brush and wood pallets was observed on the southwest portion of the property.

The property consists of vacant undeveloped land, and therefore electric, gas, water, sewage disposal, and refuse collection services are not provided to the property. No buildings, improved roads, floor drains, storm drains, wells, basements, elevators, sumps, hoists, or hydraulic lifts were observed on the property. Pole-mounted utility lines and a pole-mounted transformer are located along the northern property boundary.

Neither discolored water, stained soils, stained pavement, distressed vegetation, nor the presence of an obvious wastewater discharge were noticeable on the subject property. Strong, pungent, or noxious odors were not noticeable during the site reconnaissance. Standing surface waters including pits, ponds, and lagoons were not observed on the property. Storm water flows onto adjacent parcels and streets.

No current or past uses likely to involve the use, treatment, storage, disposal, or generation of hazardous substances or petroleum products were identified during the site reconnaissance. No obvious RECs were observed for the property during the site reconnaissance.

SURROUNDING PROPERTIES

The following current uses of adjoining properties were visually and/or physically observed during the recent site reconnaissance:

Adjacent to the north – Avenue M-2, followed by an equipment storage yard and vacant land.

Adjacent to the south – Residences.

Adjacent to the west – Westside Body and Paint, located at 5054 West Avenue M-2.

Adjacent to the east – Quartz Hill Grange Hall, located at 41843 50th Street West, and residences.

INTERVIEWS AND USER PROVIDED INFORMATION

All interviews were conducted by Amy E. Lee, a Registered Environmental Property Assessor with over nineteen (19) years experience conducting Phase I ESAs.

Earth Systems conducted an interview with a representative of the property owner, Ms. Tina M. Alleguez, counsel for Yabito Corp., via a User Provided Information Questionnaire. A copy of the completed questionnaire is included in Appendix B. Ms. Alleguez is not aware of any RECs for the property, including environmental cleanup liens, activity and land use limitations, engineering controls, or institutional controls. According to Ms. Alleguez, when Yabito Corp. purchased the property, there was an old house on the land. However, no evidence of this structure was observed on historic topographic maps or aerial photographs reviewed for this assessment. Earth Systems conducted a geotechnical study of the property in 2006. Ms. Alleguez is not aware of any obvious indicators that point to the presence or likely presence of contamination at the property. The purchase price being paid for this property reasonably reflects the fair market value of the property. This Phase I ESA is being conducted for a sales transaction.

A preliminary title report prepared for the property by Fidelity National Title Company dated April 16, 2014 was provided to Earth Systems for review. The owner of the property is listed as Yabito Corporation. No obvious RECs were identified for the property from the title report review. The property currently consists of vacant undeveloped land, and therefore operators and occupants of the property were not interviewed during the recent site reconnaissance.

Local Environmental Health Department

Earth Systems personnel contacted the Los Angeles County Department of Public Works, Environmental Programs Division to determine if any permits for installation and/or removal of underground storage tanks (USTs) exist for the subject property. No records are on file for the subject property.

RECORDS REVIEW

In order to obtain information regarding current and past RECs at the site, reasonably ascertainable information from several sources was researched. The results of this research are outlined below.

Aerial Photographs

In an attempt to identify the likelihood of past property uses having led to RECs in connection with the property or surrounding area, select aerial photographs of the subject property and surrounding areas were reviewed. Photographs taken in 1928, 1948, 1953, 1968, 1974, 1989, 1994, 2005, 2009, 2010, and 2012 were available for review.

The property consisted of an orchard in 1928. From 1948 to 2012 the property consisted of vacant undeveloped land that was not used for agricultural purposes. No buildings or improved roads were observed on the property from 1928 to 2012.

Orchards adjoined the property to the north, south, west, and east in 1928. Vacant lands adjoined the property to the south, west, and east from 1948 to 1953. Residences adjoined the property to the west and east by 1968, and to the south by 1974. The adjoining parcel to the west changed from residential to commercial use by 1989. The adjoining parcels to the south and east remained residential until 2012, and the adjoining parcel to the west remained commercial until 2012.

Avenue M-2 was unpaved along the northern property boundary from 1948 to 2005, followed by vacant land. Avenue M-2 was paved by 2009, followed by an equipment storage yard and vacant land until 2012.

One REC was identified for the property and adjoining parcels, which were occupied by orchards in 1928. It is possible that agricultural chemicals were applied to the orchards during this time period. These compounds tend to biodegrade over time, and it is Earth Systems' experience that residual concentrations of these chemicals found at similar sites are rarely discovered at levels requiring regulatory action.

Historical Topographic Maps

In an attempt to assess past property uses which may have had an environmental impact on the property or surrounding area, select historical topographic maps depicting the subject property and surrounding areas were reviewed. Maps dated 1917, 1936, 1951, 1958, and 1974 were available for review.

The property consisted of vacant land from 1917 to 1974. No roads, buildings, wells, or orchards were shown on the subject property. The property was surrounded by vacant land from 1917 to 1936. Residences were located to the south of the property by 1951, and residences were located to the west and east of the property by 1958. Avenue M-2 adjoined the property to the north in 1958, followed by vacant land.

No obvious RECs were identified for the property or surrounding areas from the historic topographic maps reviewed.

Sanborn Fire Insurance Maps

Sanborn fire insurance maps for Quartz Hill were reviewed. Coverage of the property was not available (EDR Inquiry Number 4004674.3).

City Directories

Business directories including city, cross reference, and telephone directories were reviewed, if available, at approximate five-year intervals for the years spanning from 1975 through 2013. During the course of this study, Earth Systems utilized Environmental Data Resources, Inc. (EDR) as an information source for historic city directories. No listings were found for buildings located on the subject property from 1975 to 2013.

Building Permits

During the course of this study, Earth Systems utilized EDR as an information source for local building department records. No building permits were found for the subject property.

Munger Oil and Gas Maps

Locations of oil and gas wells were reviewed in the Munger Map Book of California and Alaska Oil and Gas Fields. According to pages W-59 and W-60, no oil or gas wells have been drilled on the subject property.

Environmental Liens and AULs

During the course of this assessment, Earth Systems utilized EDR as an information source for environmental cleanup liens and AULs. A search was made for the existence of environmental cleanup liens and AULs against the subject property that are filed or recorded under federal, tribal, state, or local law. No environmental liens or AULs were identified for the property. The owner of the property was identified as Yabito Corporation.

REGULATORY AGENCY DATABASE REVIEW

To ascertain reported areas of possible environmental impairment on or in the vicinity of the subject property, one hundred and nine (109) federal, state, local, tribal, and proprietary records databases were reviewed. During the course of this study, Earth Systems utilized EDR as an information source for environmental records. Records were also reviewed on the California Regional Water Quality Control Board's GeoTracker website. A complete copy of the EDR Radius Map with GeoCheck Report is available upon request within 30 days of the completion of this report.

The subject property and adjoining parcels were not identified as hazardous materials use, storage, disposal, or release sites on any of the 109 databases reviewed. Institutional controls and engineering controls were not identified for the subject property. Oil and gas wells were not identified on the subject property. Although it was not identified on any of the databases reviewed, it is assumed that the adjoining property to the west, Westside Body and Paint located at 5054 West Avenue M-2, uses and stores hazardous materials. Based on the fact that this site was not identified as having had a reported spill or release of hazardous materials, it is not considered a REC for the subject property.

Fifteen (15) hazardous materials use, storage, disposal, or release sites were identified within the approximate minimum search distance of the subject property. Three (3) of the 15 sites have been identified as having had a reported spill or release of hazardous materials. However, two (2) of the three identified hazardous materials release sites have received regulatory agency closure, and they are therefore not considered a REC for the subject property. The twelve (12) identified hazardous materials use, storage, or disposal sites that have not had a reported spill or release of hazardous materials are not considered a REC for the subject property. The following one (1) identified hazardous materials release site has not received regulatory agency closure:

1. Minute Serve Dairy, located approximately 500-feet northeast of the property at 41940 50th Street West, is identified on the Leaking Underground Storage Tank (LUST) database. Soil samples were collected from this site following UST removal activities in 1997, and soil contaminated with gasoline was reported. The status of this case is listed as "leak being confirmed". It does not appear that any work has been done at this site since 1997. Based on the location of this site and the fact that groundwater contamination has not been reported at this site, it is not considered a REC for the subject property.

No obvious RECs for the property or adjoining parcels were noted from the 109 government databases reviewed. No obvious potential off-site sources of contamination were identified within the ASTM-specified approximate minimum search distance of the subject property.

FINDINGS AND OPINION

Historical research conducted for this assessment indicates that the property consisted of vacant undeveloped land in 1917. The property consisted of an orchard in 1928. From 1936 to 2014 the property consisted of vacant undeveloped land. According to Ms. Alleguez, counsel for Yabito Corp, when Yabito Corp. purchased the property there was an old house located on the property. However, no evidence of this structure was observed on historic topographic maps or aerial photographs reviewed for this assessment. No significant data gaps or data failures were encountered during the course of this assessment.

The property currently consists of vacant undeveloped land. Regulated quantities of hazardous materials including ASTs, USTs, and 55-gallon drums of chemicals were not observed to be used, stored, or disposed of on the property. No current or past uses likely to involve the use, treatment, storage, disposal, or generation of hazardous substances or petroleum products were identified during the site reconnaissance. No obvious RECs were observed for the property during the recent site reconnaissance.

The subject property and adjoining parcels were not identified as hazardous materials use, storage, disposal, or release site on any of the 109 databases reviewed for this assessment. Institutional controls and engineering controls were not identified for the subject property. Oil and gas wells were not identified on the subject property. The search of regulatory lists for hazardous materials sites in the vicinity of the property did not identify any obvious potential off-site sources of contamination within the ASTM-specified approximate minimum search distance of the subject property. No obvious RECs for the property were noted from the 109 databases reviewed.

Based on the research conducted for this assessment, it is Earth Systems' opinion that one REC was identified for the subject property:

1. Historical research conducted for this study indicates that the property consisted of an orchard in 1928. It is possible that agricultural chemicals (insecticides, pesticides, and/or herbicides) were applied to the property during this time period. It is not known if any residual chemicals remain in the soil. These compounds tend to biodegrade over time, and it is Earth Systems' experience that residual concentrations of these chemicals found at similar sites are rarely discovered at levels requiring regulatory action. The subject property has consisted of vacant undeveloped land for approximately 78 years. If this is a concern, soil sampling and laboratory analysis can be conducted to determine the actual presence or absence of agricultural chemicals in the soils on the property. Some counties and/or cities require soil testing on current and/or former agricultural properties prior to approving development.

No historical RECs or controlled RECs were identified during the course of this assessment. Aside from the past agricultural use of the property, no obvious conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum and petroleum products on, at, in, or to the subject property were identified during the course of this assessment. This opinion is based on the information provided to Earth Systems during the course of this assessment. Any data that is missing or was withheld from Earth Systems could alter our opinion.

CONCLUSIONS

Earth Systems has performed a Phase I ESA in general conformance with the scope and limitations of ASTM Practice E 1527-13 of APN 3101-013-058, located along the south side of Avenue M-2, west of 50th Street West in Quartz Hill, Los Angeles County, California. The property currently consists of vacant undeveloped land. Any exceptions to, or deletions from, this practice are described under the Scope of Services on page 4 of this report.

This assessment has revealed one REC in connection with the subject property.

1. Historical research conducted for this study indicates that the property consisted of an orchard in 1928. It is possible that agricultural chemicals (insecticides, pesticides, and/or herbicides) were applied to the property during this time period. It is not known if any residual chemicals remain in the soil. These compounds tend to biodegrade over time, and it is Earth Systems' experience that residual concentrations of these chemicals found at similar sites are rarely discovered at levels requiring regulatory action. The subject property has consisted of vacant undeveloped land for approximately 78 years. If this is a concern, soil sampling and laboratory analysis can be conducted to determine the actual presence or absence of agricultural chemicals in the soils on the property. Some counties and/or cities require soil testing on current and/or former agricultural properties prior to approving development.

No historical RECs or controlled RECs were identified during the course of this assessment. Aside from the past agricultural use of the property, no obvious conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum and petroleum products on, at, in, or to the subject property were identified during the course of this assessment. This opinion is based on the information provided to Earth Systems during the course of this assessment. Any data that is missing or was withheld from Earth Systems could alter our opinion.

CERTIFICATION

This Phase I ESA Report has been prepared by Earth Systems at the request of Griffin/Swinerton Venture, and has been reviewed and approved by the undersigned. The research, interviews, and field work conducted for this assessment were completed by Amy E. Lee, Registered Environmental Property Assessor, and Robert Ferguson, Staff Geologist. Mrs. Lee is an Environmental Professional with over nineteen (19) years experience conducting Phase I ESAs. Mr. Ferguson is an Environmental Professional with a Bachelor of Science degree in geology, who has over fourteen (14) years experience conducting site reconnaissances for Phase I ESAs.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 40 CFR §312.10(b). We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the "all appropriate inquiries" in conformance with the standards and practices set forth in 40 CFR Part 312.

The scope of effort upon which this report is based is intended to provide a reasonable assessment of environmental risk for the client. This effort was not absolutely exhaustive and the quality of the assessment is necessarily dependent on the quality of the information supplied to Earth Systems by all sources cited. Inspection and data collection were carried out by Earth Systems staff according to accepted standards. However, inspection was mainly surficial and the identification of possible environmental risks or contamination was limited accordingly. No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of this assessment is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs in connection with a property. Therefore, this report does not carry with it any express or implied warranty that environmental risks associated with the subject site have been totally excluded or precisely characterized.

Earth Systems trusts this report is sufficient at this time and meets your current needs. Earth Systems appreciates the opportunity to provide professional environmental services for this project. If you have any questions regarding this information or require additional studies, please contact this office at your convenience.

Reviewed and Approved by:

Earth Systems
Southern California

Amy E. Lee, REPA #157732
Environmental Assessor

REGISTERED PROFESSIONAL ENGINEER
TIM S. THOMSON
NO. C065661
CIVIL
STATE OF CALIFORNIA

Tim Thomson, C.E. #65661
Project Manager

7-29-14

LIMITATIONS

This report has been prepared for the exclusive use of Griffin/Swinerton Venture, as it pertains to the property described herein. The conclusions in this report are opinions, based on readily available information obtained to date, within the scope of work authorized by Griffin/Swinerton Venture. Use of, or reliance on the information and opinions contained in this report by other parties without first consulting this office is at those parties' own risk.

The results contained in this report are based upon the information acquired during this assessment. It is possible that variations could exist beyond or between points observed during the course of this assessment. Also, changes in observed conditions could occur at some time in the future due to contamination migration, variations in rainfall, temperature, and/or other factors not apparent at the time of the field evaluation.

It should be noted that any level of environmental assessment cannot ascertain that a property is completely free of chemical or toxic substances; therefore, Earth Systems cannot offer the certification of a "clean" site. Earth Systems believes that the scope of work performed has been appropriate to allow the client to make informed business decisions.

Earth Systems has strived to prepare this report in accordance with generally accepted geologic/environmental practices in this community, as well as good commercial and customary practice for ESAs. No warranty or guarantee is expressed or implied.

REFERENCES

Averill H. Munger, 1994, Munger Map Book of California and Alaska Oil and Gas Fields.

Environmental Data Resources, Inc., The EDR Radius Map Report with GeoCheck, Inquiry Number: 4004674.2s, July 14, 2014.

Environmental Data Resources, Inc., The EDR Certified Sanborn Map Report, Inquiry Number: 4004674.3, July 14, 2014.

Environmental Data Resources, Inc., The EDR-City Directory Image Report, Inquiry Number: 4004674.5, July 15, 2014.

Environmental Data Resources, Inc., The EDR Environmental Lien and AUL Search, Project Number: 4004674.7, July 15, 2014.

Environmental Data Resources, Inc., EDR Building Permit Report, Project Number: 4004674.8, July 14, 2014.

Environmental Data Resources, Inc., The EDR Aerial Photo Decade Package, Inquiry Number: 4004674.12, July 15, 2014.

Fidelity National Title Company, Preliminary Report, April 16, 2014.

Los Angeles County Department of Public Works, Environmental Programs Division, Personal Communication, July 23, 2014.

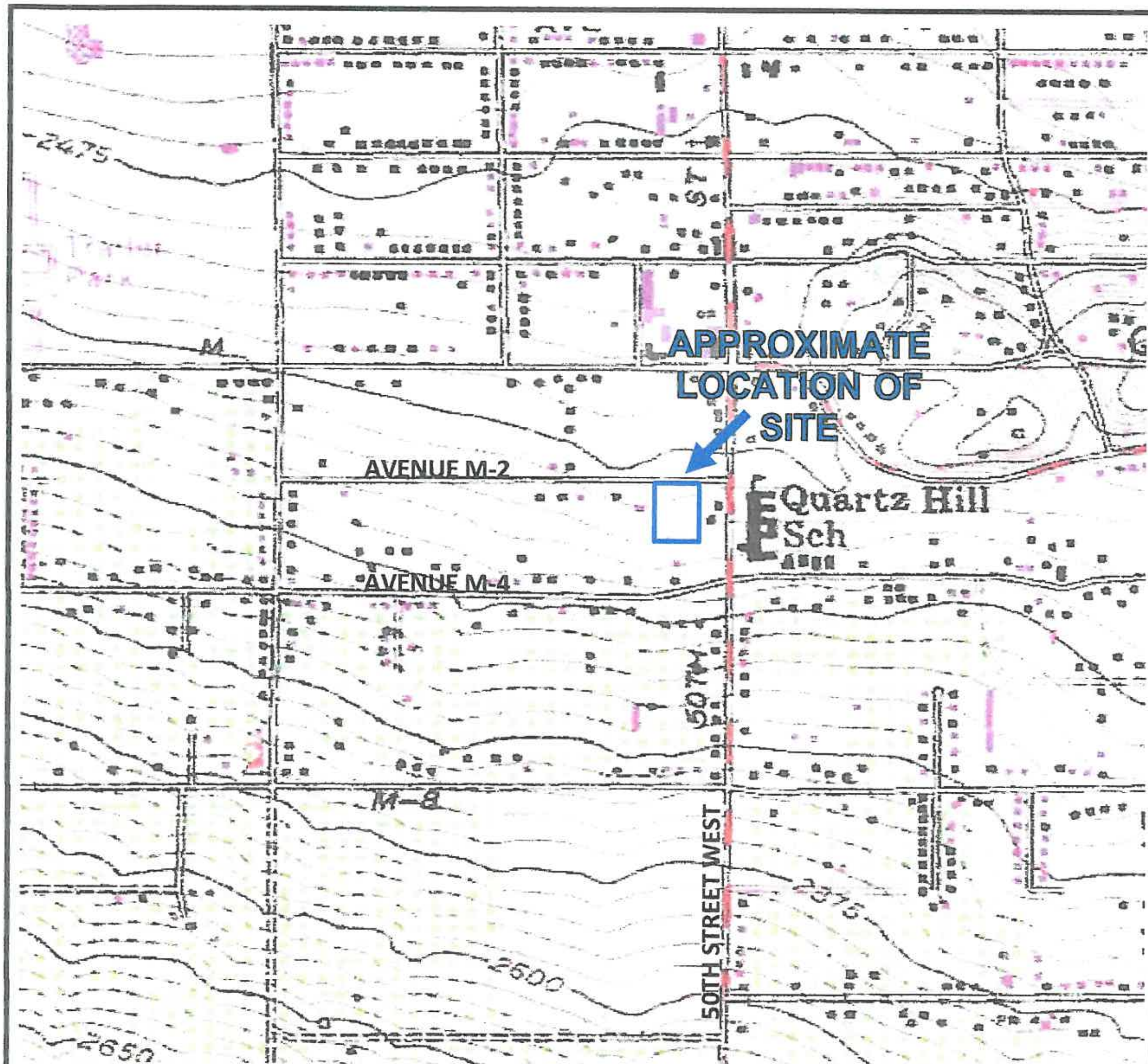
Los Angeles County Department of Public Works, Hydrologic Records Department, Personal Communication, July 23, 2014.

Regional Water Quality Control Board, GeoTracker website, July 25, 2014.

U.S.G.S. Topographic Map, 30-minute Elizabeth Lake Quadrangle, 1917.

U.S.G.S. Topographic Maps, 6-minute Del Sur Quadrangle, 1936 and 1951.

U.S.G.S. Topographic Maps, 7.5-minute Lancaster West Quadrangle, 1958 and 1974.



SOURCE: USGS Topographic Map, 7.5-Minute Lancaster West, California Quadrangle, 1958, Photorevised 1974

PLATE I

N

APPROXIMATE SCALE: 1" = 1,000'

VICINITY MAP

APN 3101-013-058
AVENUE M-2, WEST OF 50TH STREET WEST
QUARTZ HILL, LOS ANGELES COUNTY, CALIFORNIA

EARTH SYSTEMS
SOUTHERN CALIFORNIA

JULY 29, 2014	PL-06948-02

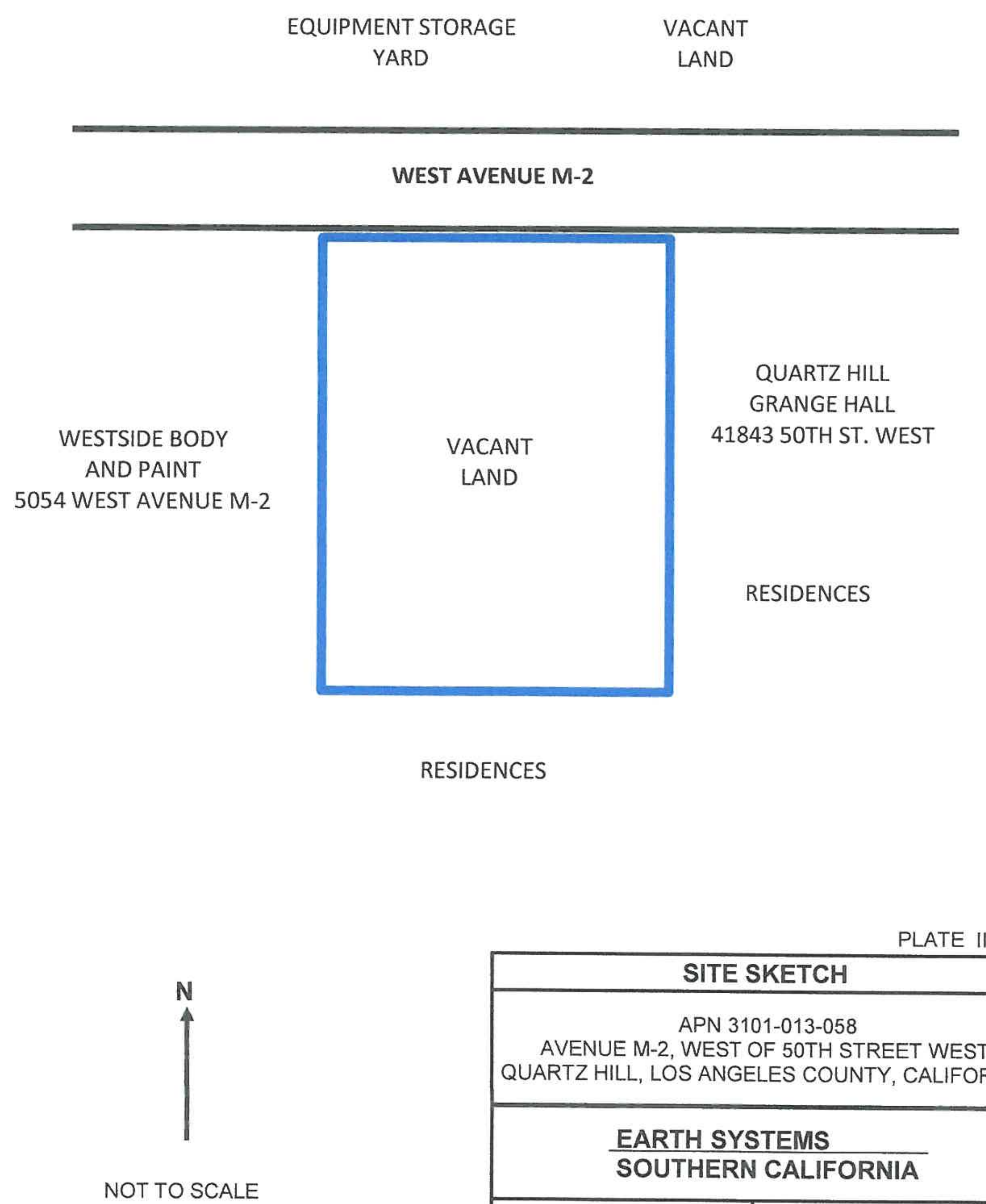


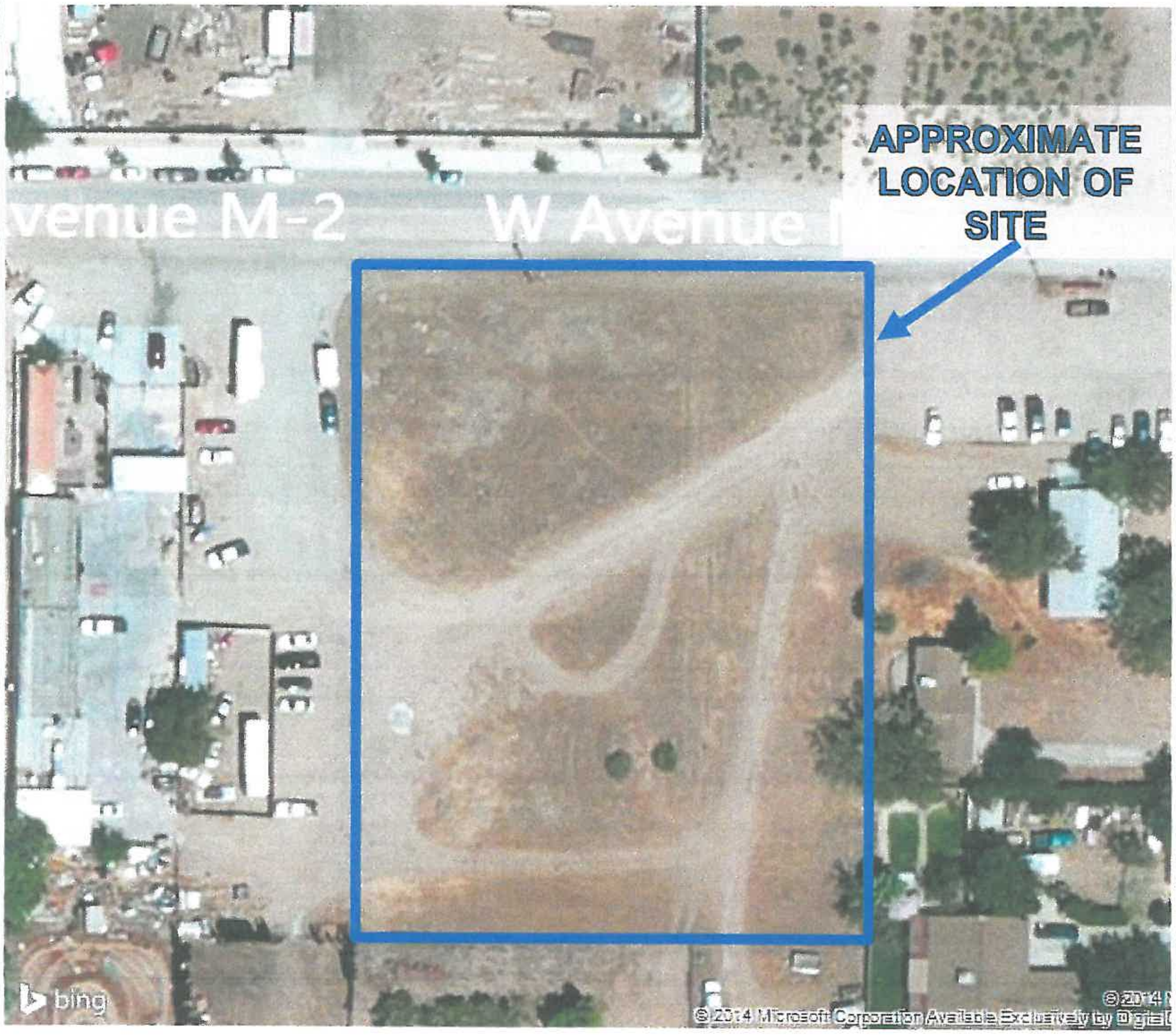
PLATE II

SITE SKETCH

APN 3101-013-058
AVENUE M-2, WEST OF 50TH STREET WEST
QUARTZ HILL, LOS ANGELES COUNTY, CALIFORNIA

**EARTH SYSTEMS
SOUTHERN CALIFORNIA**

JULY 29, 2014	PL-06948-02



SOURCE: Microsoft Bing Maps 2014

N

APPROXIMATE SCALE: 1" = 80'

PLATE III

AERIAL PHOTOGRAPH	
APN 3101-013-058 AVENUE M-2, WEST OF 50TH STREET WEST QUARTZ HILL, LOS ANGELES COUNTY, CALIFORNIA	
EARTH SYSTEMS SOUTHERN CALIFORNIA	
JULY 29, 2014	PL-06948-02

Appendix A

Site Photographs

Photo 1. Southeast-facing view from the northwest corner of the property.

Photo 2. View facing northeast from the southwest corner of the property.

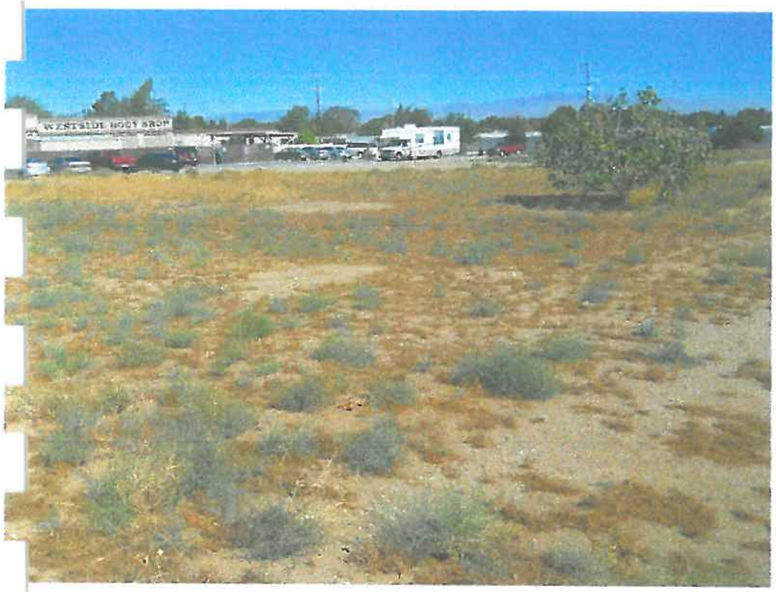


Photo 3. View facing northwest from the southeast portion of the property.

Photo 4. Southwest-facing view from the northeast portion of the property.

Appendix B

User Provided Information Questionnaire

USER PROVIDED INFORMATION QUESTIONNAIRE

DATE: July 15, 2014

CLIENT: Griffin/Swinerton Venture

PROPERTY: APN 3101-013-058

THE FOLLOWING INFORMATION MUST BE PROVIDED TO EARTH SYSTEMS SOUTHERN CALIFORNIA (ESSC) IN ORDER TO MEET ASTM STANDARD 1527-05. OUR REPORT CANNOT BE COMPLETED UNTIL WE RECEIVE THE FOLLOWING INFORMATION. PLEASE COMPLETE THIS FORM AND FAX IT TO ESSC AT 661-948-7963 AT YOUR EARLIEST CONVENIENCE. THANK YOU.

1. TITLE REPORT – PLEASE PROVIDE ESSC WITH A COPY

2. ARE YOU AWARE OF ANY PENDING, THREATENED, OR PAST LITIGATION OR ADMINISTRATIVE PROCEEDINGS RELEVANT TO HAZARDOUS SUBSTANCES OR PETROLEUM PRODUCTS IN, ON, OR FROM THE PROPERTY?

   ______YES ___✓___NO

3. ARE YOU AWARE OF ANY NOTICES FROM ANY GOVERNMENTAL ENTITY REGARDING ANY POSSIBLE VIOLATION OR ENVIRONMENTAL LAWS OR POSSIBLE LIABILITY RELATING TO HAZARDOUS SUBSTANCES OR PETROLEUM PRODUCTS?

   ______YES ___✓___NO

4. ARE YOU AWARE OF ANY ENVIRONMENTAL CLEANUP LIENS AGAINST THE PROPERTY THAT ARE FILED OR RECORDED UNDER FEDERAL, TRIBAL, STATE, OR LOCAL LAW?

   ______YES ___✓___NO

5. ARE YOU AWARE OF ANY ACTIVITY AND LAND USE LIMITATIONS, SUCH AS ENGINEERING CONTROLS, LAND USE RESTRICTIONS, OR INSTITUTIONAL CONTROLS THAT ARE IN PLACE AT THE SITE AND/OR HAVE BEEN FILED OR RECORDED IN A REGISTRY UNDER FEDERAL, TRIBAL, STATE, OR LOCAL LAW?

   ______YES ___✓___NO

6. DO YOU HAVE ANY SPECIALIZED KNOWLEDGE OR EXPERIENCE RELATED TO THE PROPERTY OR NEARBY PROPERTIES?

_______YES ___✓___NO

7. ARE YOU AWARE OF ANY COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION ABOUT THE PROPERTY OR NEARBY PROPERTIES THAT WOULD HELP IDENTIFY CONDITIONS INDICATIVE OF RELEASES OR THREATENED RELEASES?

_______YES ___✓___NO

8. DO YOU KNOW THE PAST USES OF THE PROPERTY?

___✓___YES (PLEASE LIST) _______NO

Only that when purchased by Yabilo, there was an old house on the land. Yabilo Corp is not aware of any other uses.

9. DO YOU KNOW OF SPECIFIC CHEMICALS THAT ARE PRESENT OR ONCE WERE PRESENT AT THE PROPERTY?

_______YES (PLEASE LIST) ___✓___NO

10. DO YOU KNOW OF SPILLS OR OTHER CHEMICAL RELEASES THAT HAVE TAKEN PLACE AT THE PROPERTY?

_______YES (PLEASE LIST) ___✓___NO

11. DO YOU KNOW OF ANY ENVIRONMENTAL CLEANUPS THAT HAVE TAKEN PLACE AT THE PROPERTY?

_______YES (PLEASE LIST) ___✓___NO

12. DOES THE PURCHASE PRICE BEING PAID FOR THIS PROPERTY REASONABLY REFLECT THE FAIR MARKET VALUE OF THE PROPERTY?

___✓___YES _______NO

IF NO, IS THE LOWER PURCHASE PRICE DUE TO CONTAMINATION THAT IS KNOWN OR BELIEVED TO BE PRESENT AT THE PROPERTY?

_______YES _______NO

13. BASED ON YOUR KNOWLEDGE AND EXPERIENCE RELATED TO THE PROPERTY, ARE THERE ANY OBVIOUS INDICATORS THAT POINT TO THE PRESENCE OR LIKELY PRESENCE OF CONTAMINATION AT THE PROPERTY?

_______YES ___✓___NO

14. PROPERTY OWNER NAME Yabito Corp. AND PHONE NUMBER 661-265-0304

15. PROPERTY MANAGER NAME Ruth Nieto AND PHONE NUMBER 661-265-0304

16. OCCUPANT NAME N/A - vacant land AND PHONE NUMBER_______________

17. REASON FOR PERFORMING PHASE I ENVIRONMENTAL SITE ASSESSMENT?

   A. _____TO QUALIFY FOR LANDOWNER LIABILITY PROTECTIONS TO CERCLA LIABILITY

   B. __✓__OTHER: Sale transaction.

18. ARE YOU AWARE OF ANY OF THE FOLLOWING DOCUMENTS THAT MAY EXIST FOR THE PROPERTY?

   A. ENVIRONMENTAL SITE ASSESSMENT REPORTS _______YES ___✓___NO
   B. ENVIRONMENTAL COMPLIANCE AUDIT REPORTS _______YES ___✓___NO
   C. ENVIRONMENTAL PERMITS (E.G. SOLID WASTE DISPOSAL PERMITS, HAZARDOUS WASTE DISPOSAL PERMITS, WASTEWATER PERMITS, NPDES PERMITS, UNDERGROUND INJECTION PERMITS)_______YES ___✓___NO

D. REGISTRATIONS FOR UNDERGROUND AND ABOVEGROUND STORAGE TANKS
_____YES __✓__ NO

E. REGISTRATIONS FOR UNDERGROUND INJECTION SYSTEMS
_____YES __✓__ NO

F. MATERIAL SAFETY DATA SHEETS _____YES __✓__ NO

G. COMMUNITY RIGHT-TO-KNOW PLAN _____YES __✓__ NO

H. SAFETY PLANS; PREPAREDNESS AND PREVENTION PLANS; SPILL PREVENTION, COUNTERMEASURE, AND CONTROL PLANS
_____YES __✓__ NO

I. REPORTS REGARDING HYDROGEOLOGIC CONDITIONS ON THE PROPERTY OR SURROUNDING AREA _____YES __✓__ NO

J. NOTICES OR OTHER CORRESPONDENCE FROM ANY GOVERNMENT AGENCY RELATING TO PAST OR CURRENT VIOLATIONS OF ENVIRONMENTAL LAWS WITH RESPECT TO THE PROPERTY OR RELATING TO ENVIRONMENTAL LIENS ENCUMBERING THE PROPERTY _____YES __✓__ NO

K. HAZARDOUS WASTE GENERATOR NOTICES OR REPORTS
_____YES __✓__ NO

L. GEOTECHNICAL STUDIES __✓__ YES _____ NO (prepared by ESSC in 2006)

M. RISK ASSESSMENTS _____YES __✓__ NO

N. RECORDED ACTIVITY AND USE LIMITATIONS _____YES __✓__ NO

IF YES ON (A-N) ABOVE, WILL COPIES BE PROVIDED TO ESSC FOR REVIEW?
__✓__ YES _____ NO

COMPLETED BY:

SIGNATURE: Tina M. Allegrez

PRINT NAME: Tina M. Allegrez
Counsel for Yabito Corp

DATE: 7/18/14

QUALIFICATIONS STATEMENTS

Earth Systems' multi-disciplinary professional staff has extensive experience with and education in chemistry, geology, geophysics, hydrogeology, mechanical engineering, civil engineering, mapping, soil science, drafting, and surveying. Earth Systems' senior project and staff professionals include Certified Engineering Geologists, Certified Hydrogeologists, Registered Geologists, Registered Environmental Property Assessors, and Professional Engineers. These professionals generally hold an average of two registrations and/or certifications in their area of expertise. To continue to meet Earth Systems' commitment to technical expertise, Earth Systems considers it essential to train personnel in the latest scientific advancements in assessment and mitigation techniques. This involves continuing education in the form of training seminars, literature reviews, and pertinent conferences to remain abreast of recent developments in this complex and rapidly changing field.

The following information states the credentials of the professionals who performed field, research and/or report preparation on the project.

AMY E. LEE
Environmental Assessor

Years in Field: 19
Years with Earth Systems: 19

EDUCATION:

B.S., Forestry and Natural Resources Management
California Polytechnic State University, San Luis Obispo, CA, GPA 3.5

REGISTRATIONS:

REPA – Registered Environmental Property Assessor #157732
REA - Registered Environmental Assessor I-07387 from 1999 through 2012 (program terminated on July 1, 2012)
OSHA/EPA 40-Hour Health and Safety Training for Hazardous Waste Operations and Yearly 8-Hour Refresher Course

PROFESSIONAL EXPERIENCE:

Amy Lee has more than nineteen years experience in performing all aspects of environmental site assessments, site characterizations, and remediation plans in conformance with ASTM Standards. Ms. Lee has performed Phase I and Phase II Assessments on commercial, industrial, and residential properties throughout California. Her work includes conducting site reconnaissances, evaluating historical research, reviewing regulatory agency records and government databases, interpreting aerial photographs, sampling soil and groundwater, interpreting laboratory data, and preparing final reports that include recommendations for remediation. Ms. Lee has authored numerous Closure Reports, Work Plans, and Health and Safety Plans for regulatory agency submittal.

Representative Experience:

- *Phase I Environmental Site Assessments.* As an Environmental Assessor, Ms. Lee specializes in performing Phase I Environmental Site Assessments in conformance with ASTM Standard E 1527-13. Phase I Environmental Site Assessments are conducted to identify recognized environmental conditions in connection with a property. The term "recognized environmental conditions" means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

- *Environmental Audits.* Ms. Lee has conducted Site Closure Environmental Audits for properties in southern California. Services performed include an initial site reconnaissance to identify areas of potential environmental concern; soil and

Robert T. Ferguson
Staff Geologist

Years in Field: 14
Years with Earth Systems: 14

EDUCATION:

B.S., Geology, California State University, Sonoma, 1998

REGISTRATION AND CERTIFICATIONS:

ACI Certified Concrete Technician, Level 1
Licensed Nuclear Gauge Operator

PROFESSIONAL AFFILIATIONS:

Geological Society of America

PROFESSIONAL EXPERIENCE:

Employed with Earth Systems in the Palmdale office since 1999, Mr. Ferguson helps to plan and conduct subsurface exploration programs related to geologic hazards analysis, geotechnical investigations, and environmental assessments.

- Conducts field exploration programs related to soils engineering investigations and geologic hazards analysis.
- Designs on-site sewage disposal systems based on field data and conforming to the design requirements of relevant regulating agencies.
- Performs preliminary environmental site assessments and environmental sampling programs.
- Prepares detailed geologic maps and cross-sections based on data gathered during field exploration programs.

SELECTED MAJOR PROJECT EXPERIENCE:

- *DeButts Terrace Landslide Repair, Malibu, California.* A landslide occurred in a canyon area adjacent to two nearby homes during a period of heavy rainfall. Mr. Ferguson conducted the initial site exploration program and the collected data was used to define the limits of the landslide mass and to provide repair recommendations. During the repair phase of the project Mr. Ferguson served as geotechnical technician performing compaction testing, grading observation, and accurately mapping the critical design components such as: keyway, sub-drains, and benching.

- *Proposed Acton Library, Acton California.* Designed the on-site sewage disposal system for the proposed library facility. Mr. Ferguson creatively designed the system taking into account limitations posed by drainage setbacks, building setbacks, and placement limitations posed by the project architect. This design incorporates the modern denitrification technology required by Los Angeles County for this type of system.

Appendix E

Noise

Fundamental Concepts of Environmental Noise

Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound. Noise is commonly defined as unwanted sound or sound that is objectionable because it is disturbing or annoying.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and the obstructions or atmospheric factors that affect the propagation path to the receiver determine the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hz. The audible frequency range for humans is generally between 20 and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micropascals (μPa). One μPa is approximately one-hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 μPa. Because of this huge range of values, sound is rarely expressed in terms of μPa. Instead, a logarithmic scale is used to describe the sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 μPa.

Addition of Decibels

Because dBs are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the dB scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the dB scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

A-Weighted Decibels

The dB scale alone does not adequately characterize how humans perceive sound. The dominant frequencies of a sound have a substantial effect on human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in its range of audible frequencies as well as the way in which it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000 to 8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people judge the relative loudness or annoyance of a sound, their judgments correlate well with A-weighted sound levels of those sounds. Other weighting networks (e.g., B, C, and D scales) have been devised to address high noise levels or other special problems, but these scales are rarely used in conjunction with transit- or highway-related noise. Noise levels for technical reports related to transit or traffic noise are typically reported in terms of A-weighted decibels, or dBA. Table A-1 describes typical A-weighted noise levels for various noise sources.

Table A-1. Typical A-Weighted Noise Levels

Common Outdoor Activities or Conditions	Noise Level (dBA)	Common Indoor Activities or Locations
	— 110 —	Rock band
Jet flying at 1,000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	**— 70 —**	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	**— 60 —**	
		Large business office
Quiet urban daytime	**— 50 —**	Dishwasher next room
Quiet urban nighttime	**— 40 —**	Theater, large conference room (background)
Quiet suburban nighttime		
	— 30 —	Library
Quiet rural nighttime		Bedroom at night, concert
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	**— 0 —**	Lowest threshold of human hearing
Source: California Department of Transportation 2009.		

Human Response to Changes in Noise Levels

As discussed above, a doubling of sound energy results in a 3 dB increase in sound. However, when the sound level change is measured with precise instrumentation, the subjective human perception of the doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1 dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 to 8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound-level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3 dB increase in sound would generally be perceived as barely detectable.

Noise Descriptors

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following noise descriptors are commonly used to describe environmental noise levels.

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level, or L_{eq}(h), is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the maximum sound level measured during a specified period.
- **Minimum Sound Level (L_{min}):** L_{min} is the minimum sound level measured during a specified period.
- **Day/Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m. and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the factors described below.

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Roadways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

Ground Absorption

The propagation path of noise from a source to a receiver is often very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, excess attenuation has been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees between the source and the receiver), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.

Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Sound levels can increase at large distances (e.g., more than 500 feet) from a source because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors, such as air temperature, humidity, and turbulence, can also have significant effects.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and ridges) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver for the specific purpose of reducing noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A higher barrier may provide as much as 20 dB of noise reduction. Vegetation between a source and receiver is rarely effective in reducing noise because it does not create a solid barrier.

Fundamental Concepts of Groundborne Vibration

This section describes basic concepts related to groundborne vibration. In contrast to airborne sound, groundborne vibration is not a phenomenon that most people experience every day. The background vibration velocity level in residential areas is usually much lower than the threshold of human perception. Most perceptible indoor vibration is caused by sources within buildings, such as mechanical equipment while in operation, people moving, or doors slamming. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads.

Construction activity can result in varying degrees of ground vibration, depending on the equipment and method used. Equipment such as air compressors, light trucks, and hydraulic loaders generate little or no ground vibration. Pile drivers, vibratory compactors, and demolition equipment have the potential to generate substantial vibration, which may present a concern if close to buildings (Federal Transit Administration 2006).

Dynamic construction equipment, such as pile drivers, can create vibrations that radiate along the surface and downward into the earth. These surface waves can be felt as groundborne vibration. Vibration can result in effects that range from annoyance to structural damage. Variations in geology and distance result in different vibration levels with different frequencies and displacements. In all cases, vibration amplitudes decrease with increased distance from the vibration source.

As vibration waves travel outward from a source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity, in inches per second (in/s), at which these particles move is the commonly accepted descriptor of vibration amplitude and is commonly quantified in terms of peak particle velocity (PPV). PPV is defined as the maximum instantaneous positive or negative peak amplitude of the vibration velocity. For transient vibration sources (single isolated vibration events such as blasting), the human response to vibration varies from barely perceptible at a PPV of 0.04 in/s, to distinctly perceptible at a PPV of 0.25 in/s, and severe at a PPV of 2.0 in/s. For continuous or frequent intermittent vibration sources (such as impact pile driving or vibratory compaction equipment), the human response to vibration varies from barely perceptible at a PPV of 0.01 in/s, to distinctly perceptible at a PPV of 0.04 in/s, and severe at a PPV of 0.4 in/s (Caltrans, 2013). If a person is engaged in any type of physical activity, vibration tolerance increases considerably.

Groundborne vibration can also be expressed in terms of root-mean-square (RMS) vibration velocity to evaluate human response to vibration levels. RMS is defined as the average of the squared amplitude of the vibration signal. The vibration amplitude is expressed in terms of vibration decibels (VdB), which use a reference level of 1 micro-inch per second. Typical background vibration levels are between 50 and 60 VdB. The threshold of perception for most people is around 65 VdB. Vibration levels in the 70 to 80 VdB range are often noticeable but acceptable. Typically, vibration levels must exceed 100 VdB before building damage occurs. Historic structures, however, may have a damage threshold as low as 90 VdB.

At higher frequencies, groundborne vibration can be perceived as a noise source. At sufficiently high amplitudes, the propagation of vibration waves through the ground can cause building elements to vibrate at a frequency that is audible to the human ear. Groundborne noise can rattle windows, walls, or other items that are coupled to building surfaces. Groundborne vibration levels that result in groundborne noise are often experienced as a combination of perceptible vibration and low-frequency noise.

Land uses that are sensitive to groundborne vibration include places where people reside, schools, libraries, and places of worship. Hospital operating rooms and certain types of industries that use vibration-sensitive equipment are considered highly sensitive to groundborne noise and vibration.

Outdoor park facilities, such as picnic areas or athletic fields, are not considered sensitive to groundborne noise or vibration.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: Grading, foundations, & slab-on-grade

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Noise Level at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Scraper	No	40		83.6	50	0
Compactor (ground)	No	20		83.2	50	0
Grader	No	40	85		50	0
Concrete Pump Truck	No	20		81.4	50	0
Flat Bed Truck	No	40		74.3	50	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Scraper		83.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		83.2	79.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		85	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		81.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85	87.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 30'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Scraper	No	40		83.6	30	0
Compactor (ground)	No	20		83.2	30	0
Grader	No	40	85		30	0
Concrete Pump Truck	No	20		81.4	30	0
Flat Bed Truck	No	40		74.3	30	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Scraper		88	87	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		87.7	83.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		89.4	88.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		85.8	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		78.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	89.4	92.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 40'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Scraper	No	40		83.6	40	0
Compactor (ground)	No	20		83.2	40	0
Grader	No	40	85		40	0
Concrete Pump Truck	No	20		81.4	40	0
Flat Bed Truck	No	40		74.3	40	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Scraper		85.5	84.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		85.2	81.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		86.9	86	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		83.3	79.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		76.2	75.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	86.9	89.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 130'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Scraper	No	40		83.6	130	0
Compactor (ground)	No	20		83.2	130	0
Grader	No	40	85		130	0
Concrete Pump Truck	No	20		81.4	130	0
Flat Bed Truck	No	40		74.3	130	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Scraper		75.3	74.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		74.9	70.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		76.7	75.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		66	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	76.7	79.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 150'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Scraper	No	40		83.6	150	0
Compactor (ground)	No	20		83.2	150	0
Grader	No	40	85		150	0
Concrete Pump Truck	No	20		81.4	150	0
Flat Bed Truck	No	40		74.3	150	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Scraper		74	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		73.7	69.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		75.5	74.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		71.9	67.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		64.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	75.5	78.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: On-site and off-site utilities and improvements

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Noise Level at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	50	0
Compactor (ground)	No	20		83.2	50	0
Grader	No	40	85		50	0
Concrete Pump Truck	No	20		81.4	50	0
Paver	No	50		77.2	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Backhoe		77.6	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		83.2	79.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		85	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		81.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		77.2	77.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85	86.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	50	0
Compactor (ground)	No	20		83.2	50	0
Grader	No	40	85		50	0
Concrete Pump Truck	No	20		81.4	50	0
Paver	No	50		77.2	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Backhoe		77.6	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		83.2	79.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		85	84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		81.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		77.2	77.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85	86.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 90'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	90	0
Compactor (ground)	No	20		83.2	90	0
Grader	No	40	85		90	0
Concrete Pump Truck	No	20		81.4	90	0
Paver	No	50		77.2	90	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Backhoe		72.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		78.1	74.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		79.9	78.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		76.3	72.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		72.1	72.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79.9	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 200'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	200	0
Compactor (ground)	No	20		83.2	200	0
Grader	No	40	85		200	0
Concrete Pump Truck	No	20		81.4	200	0
Paver	No	50		77.2	200	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Backhoe		65.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		73	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		65.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	73	74.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	220	0
Compactor (ground)	No	20		83.2	220	0
Grader	No	40	85		220	0
Concrete Pump Truck	No	20		81.4	220	0
Paver	No	50		77.2	220	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Backhoe		64.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)		70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader		72.1	71.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Concrete Pump Truck		68.5	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		64.4	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	72.1	74	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: Structure and framing

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receiver at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	50	0
Crane	No	16		80.6	50	0
Welder / Torch	No	40		74	50	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Flat Bed Truck		74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		80.6	75.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		74	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80.6	78.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 140'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	140	0
Crane	No	16		80.6	140	0
Welder / Torch	No	40		74	140	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Flat Bed Truck		65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		71.6	66.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		65.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	71.6	70	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 180'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	180	0
Crane	No	16		80.6	180	0
Welder / Torch	No	40		74	180	0

Results

		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		63.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		69.4	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		62.9	61.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	69.4	67.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	220	0
Crane	No	16		80.6	220	0
Welder / Torch	No	40		74	220	0

Results

		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		67.7	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		61.1	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	67.7	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	220	0
Crane	No	16		80.6	220	0
Welder / Torch	No	40		74	220	0

Results

		Calculated (dBA)			Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		67.7	62.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch		61.1	60.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	67.7	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: Rough-ins, exterior skin, and roofing

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receiver at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	50	0
Flat Bed Truck	No	40		74.3	50	0
Dump Truck	No	40		76.5	50	0
Compressor (air)	No	40		77.7	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Front End Loader		79.1	78.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		76.5	75.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		77.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	79.1	82.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 140'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	140	0
Flat Bed Truck	No	40		74.3	140	0
Dump Truck	No	40		76.5	140	0
Compressor (air)	No	40		77.7	140	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Front End Loader		70.2	69.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		67.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		68.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	70.2	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 180'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	180	0
Flat Bed Truck	No	40		74.3	180	0
Dump Truck	No	40		76.5	180	0
Compressor (air)	No	40		77.7	180	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Front End Loader		68	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		63.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		66.5	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	68	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	220	0
Flat Bed Truck	No	40		74.3	220	0
Dump Truck	No	40		76.5	220	0
Compressor (air)	No	40		77.7	220	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Front End Loader		66.2	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		64.8	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.2	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	220	0
Flat Bed Truck	No	40		74.3	220	0
Dump Truck	No	40		76.5	220	0
Compressor (air)	No	40		77.7	220	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Front End Loader		66.2	65.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)		64.8	63.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.2	69.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: Interior finishes

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	50	0
Dump Truck	No	40		76.5	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		76.5	75.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	76.5	77.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 140'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	140	0
Dump Truck	No	40		76.5	140	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		67.5	66.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	67.5	68.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 180'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	180	0
Dump Truck	No	40		76.5	180	0

Results

Equipment		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		63.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	65.3	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	220	0
Dump Truck	No	40		76.5	220	0

Results

Equipment		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	220	0
Dump Truck	No	40		76.5	220	0

Results

Equipment		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck		63.6	62.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.6	64.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: Exterior hardscape & landscape

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receiver at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Pump Truck	No	20		81.4	50	0
Flat Bed Truck	No	40		74.3	50	0
Excavator	No	40		80.7	50	0
Backhoe	No	40		77.6	50	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Concrete Pump Truck		81.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		80.7	79.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		77.6	76.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	81.4	83.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 30'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Pump Truck	No	20		81.4	30	0
Flat Bed Truck	No	40		74.3	30	0
Excavator	No	40		80.7	30	0
Backhoe	No	40		77.6	30	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Concrete Pump Truck		85.8	81.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		78.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		85.1	84.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		82	81	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	85.8	87.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 40'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Pump Truck	No	20		81.4	40	0
Flat Bed Truck	No	40		74.3	40	0
Excavator	No	40		80.7	40	0
Backhoe	No	40		77.6	40	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Concrete Pump Truck		83.3	79.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		76.2	75.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		82.6	81.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		79.5	78.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	83.3	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 130'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Pump Truck	No	20		81.4	130	0
Flat Bed Truck	No	40		74.3	130	0
Excavator	No	40		80.7	130	0
Backhoe	No	40		77.6	130	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Concrete Pump Truck		73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		66	65	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		72.4	71.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		69.3	68.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	73.1	75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 150'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Pump Truck	No	20		81.4	150	0
Flat Bed Truck	No	40		74.3	150	0
Excavator	No	40		80.7	150	0
Backhoe	No	40		77.6	150	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Concrete Pump Truck		71.9	67.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Flat Bed Truck		64.7	63.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	70.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe		68	67	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	71.9	73.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/29/2014
Case Description: Fixtures, Furnishings, & Equipment

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receiver at 50'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	50	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Flat Bed Truck		74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	74.3	73.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 1 at 140'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	140	0

Results

Equipment		Calculated (dBA) *Lmax	L10	Noise Limits (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10	Noise Limit Exceedance (dBA) Day Lmax	L10	Evening Lmax	L10	Night Lmax	L10
Flat Bed Truck		65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	65.3	64.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 2 at 180'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	180	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		63.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63.1	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 3 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	220	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Receptor 4 at 220'	Residential	45	45	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	220	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10	Lmax	L10
Flat Bed Truck		61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	61.4	60.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

This spreadsheet calculates traffic noise levels based on TNM Version 2.5 Lookup Tables.

**** Type in yellow cells only.**

Traffic Data:

- Enter ADT Traffic
- Enter Loudest-hour Traffic

Units:

- Metric
- English

Calculate

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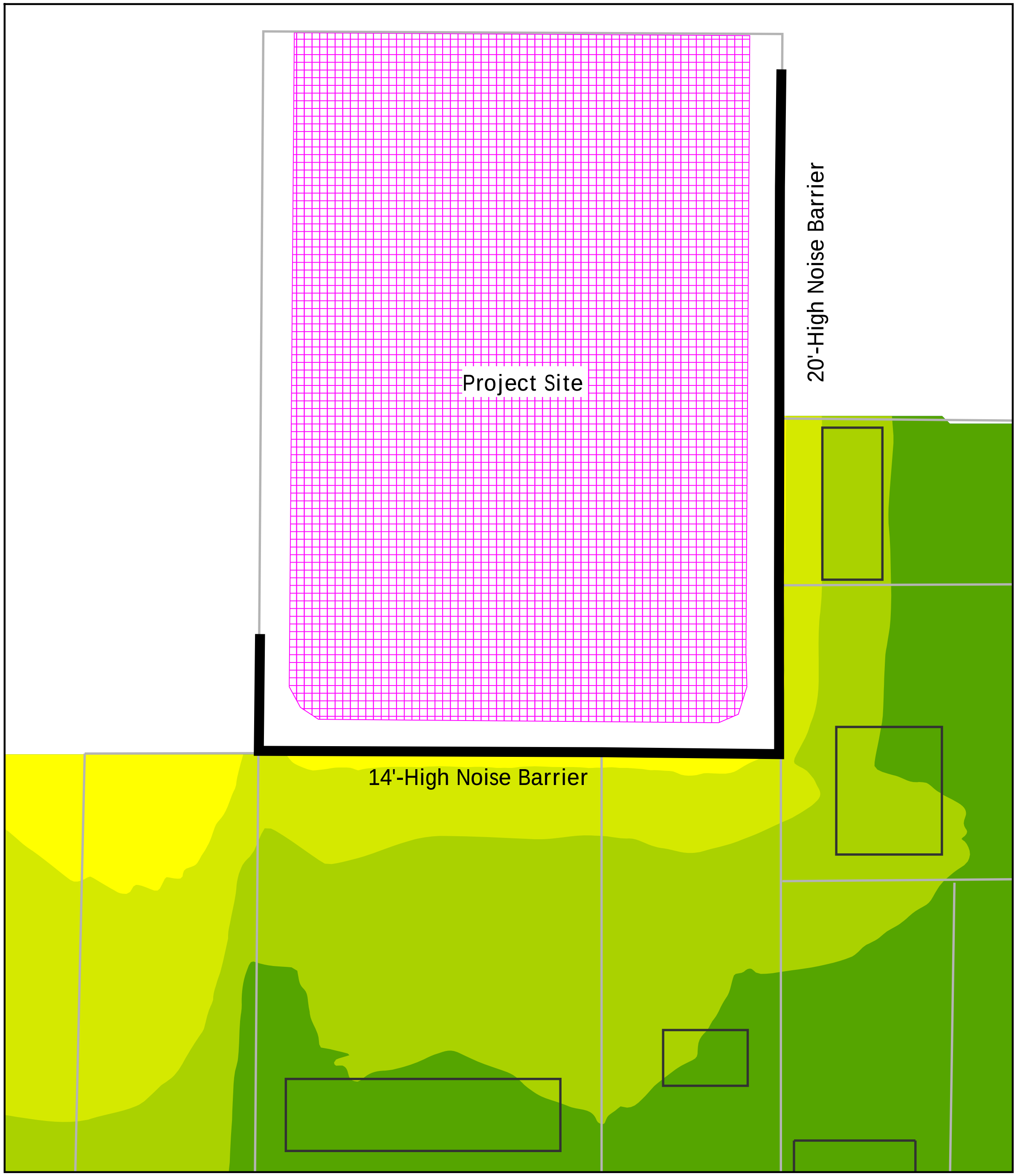
Link	Roadway	Segment Location	Hard or Soft Ground (H or S)	BARRIER Present 1=yes	BARRIER Height min. 7 ft. max. 32 ft.	BARRIER Distance 35 ft. or 100 ft.	Total Daily Traffic Volumes (ADT)	Traffic Mix Number #	Traffic Mix Description	Vehicle Speed mph max. 80	Sound Levels at Receiver Locations: Distance feet, min. 33 max. 1000	Sound Levels at Receiver Locations: dB CNEL	Distance to CNEL Noise Contour (feet): 75 dB	70 dB	65 dB	60 dB
1	50th Street W (Existing)	N of W Avenue L-8	H				9,831	8	County of Riverside, secondary, co	35	50	64.7			47	147
2	50th Street W (Existing)	W Avenue L-8 to Columbia Way	H				12,345	8	County of Riverside, secondary, co	35	50	65.7			58	182
3	50th Street W (Existing)	Columbia Way - W Avenue M-4	H				12,337	8	County of Riverside, secondary, co	35	50	65.7			58	182
4	50th Street W (Existing)	W Avenue M-4 - W Avenue M-8	H				9,695	8	County of Riverside, secondary, co	35	50	64.7			46	145
5	50th Street W (Existing)	W Avenue M-8 - W Avenue N	H				10,820	8	County of Riverside, secondary, co	45	50	68.3			102	298
6	50th Street W (Existing)	S of W Avenue N	H				13,021	8	County of Riverside, secondary, co	55	50	71.7		70	215	546
7	Columbia Way (Existing)	W of 50th Street W	H				6,574	8	County of Riverside, secondary, co	40	50	64.6			46	140
8	W Avenue M-8 (Existing)	W of 50th Street W	H				2,465	8	County of Riverside, secondary, co	50	50	63.3				102
9	W Avenue N (Existing)	W of 50th Street W	H				13,680	8	County of Riverside, secondary, co	55	50	71.9		74	223	569
10	W Avenue N (Existing)	E of 50th Street W	H				8,149	8	County of Riverside, secondary, co	55	50	69.7		46	138	383
11	50th Street W (Opening Year)	N of W Avenue L-8	H				10,513	8	County of Riverside, secondary, co	35	50	65.0			50	156
12	50th Street W (Opening Year)	W Avenue L-8 to Columbia Way	H				13,027	8	County of Riverside, secondary, co	35	50	65.9			60	191
13	50th Street W (Opening Year)	Columbia Way - W Avenue M-4	H				12,845	8	County of Riverside, secondary, co	35	50	65.9			60	189
14	50th Street W (Opening Year)	W Avenue M-4 - W Avenue M-8	H				10,203	8	County of Riverside, secondary, co	35	50	64.9			49	152
15	50th Street W (Opening Year)	W Avenue M-8 - W Avenue N	H				11,248	8	County of Riverside, secondary, co	45	50	68.4			106	308
16	50th Street W (Opening Year)	S of W Avenue N	H				13,367	8	County of Riverside, secondary, co	55	50	71.8		72	219	558
17	Columbia Way (Opening Year)	W of 50th Street W	H				6,654	8	County of Riverside, secondary, co	40	50	64.7			46	142
18	W Avenue M-8 (Opening Year)	W of 50th Street W	H				2,545	8	County of Riverside, secondary, co	50	50	63.4			33	106
19	W Avenue N (Opening Year)	W of 50th Street W	H				13,760	8	County of Riverside, secondary, co	55	50	71.9		74	225	571
20	W Avenue N (Opening Year)	E of 50th Street W	H				8,149	8	County of Riverside, secondary, co	55	50	69.7		46	138	383
21	50th Street W (Existing with Project)	N of W Avenue L-8	H				9,971	8	County of Riverside, secondary, co	35	50	64.8			48	149
22	50th Street W (Existing with Project)	W Avenue L-8 to Columbia Way	H				12,485	8	County of Riverside, secondary, co	35	50	65.8			58	184
23	50th Street W (Existing with Project)	Columbia Way - W Avenue M-4	H				12,689	8	County of Riverside, secondary, co	35	50	65.8			59	186
24	50th Street W (Existing with Project)	W Avenue M-4 - W Avenue M-8	H				10,083	8	County of Riverside, secondary, co	35	50	64.8			48	150
25	50th Street W (Existing with Project)	W Avenue M-8 - W Avenue N	H				11,138	8	County of Riverside, secondary, co	45	50	68.4			105	305
26	50th Street W (Existing with Project)	S of W Avenue N	H				13,127	8	County of Riverside, secondary, co	55	50	71.7		70	216	550
27	Columbia Way (Existing with Project)	W of 50th Street W	H				6,714	8	County of Riverside, secondary, co	40	50	64.7			47	143
28	W Avenue M-8 (Existing with Project)	W of 50th Street W	H				2,535	8	County of Riverside, secondary, co	50	50	63.4			33	105
29	W Avenue N (Existing with Project)	W of 50th Street W	H				13,786	8	County of Riverside, secondary, co	55	50	71.9		74	225	572
30	W Avenue N (Existing with Project)	E of 50th Street W	H				8,255	8	County of Riverside, secondary, co	55	50	69.7		47	140	387
31	50th Street W (Opening Year with Project)	N of W Avenue L-8	H				10,653	8	County of Riverside, secondary, co	35	50	65.1			51	158
32	50th Street W (Opening Year with Project)	W Avenue L-8 to Columbia Way	H				13,167	8	County of Riverside, secondary, co	35	50	66.0			61	193
33	50th Street W (Opening Year with Project)	Columbia Way - W Avenue M-4	H				13,197	8	County of Riverside, secondary, co	35	50	66.0			61	193
34	50th Street W (Opening Year with Project)	W Avenue M-4 - W Avenue M-8	H				10,591	8	County of Riverside, secondary, co	35	50	65.1			51	157
35	50th Street W (Opening Year with Project)	W Avenue M-8 - W Avenue N	H				11,566	8	County of Riverside, secondary, co	45	50	68.5		34	109	315
36	50th Street W (Opening Year with Project)	S of W Avenue N	H				13,473	8	County of Riverside, secondary, co	55	50	71.8		73	221	562
37	Columbia Way (Opening Year with Project)	W of 50th Street W	H				6,794	8	County of Riverside, secondary, co	40	50	64.8			47	145
38	W Avenue M-8 (Opening Year with Project)	W of 50th Street W	H				2,615	8	County of Riverside, secondary, co	50	50	63.6			35	109
39	W Avenue N (Opening Year with Project)	W of 50th Street W	H				13,866	8	County of Riverside, secondary, co	55	50	71.9		75	226	575
40	W Avenue N (Opening Year with Project)	E of 50th Street W	H				8,255	8	County of Riverside, secondary, co	55	50	69.7		47	140	387
41	50th Street W (Existing with Project)	Near project site	H				12,689	8	County of Riverside, secondary, co	35	200	59.7			59	186
42	50th Street W (Opening Year with Project)	Near project site	H				13,197	8	County of Riverside, secondary, co	35	200	59.8			61	193



Estimated Mitigated Noise Levels at Nearby Sensitive Receptors Due to Project Construction

Estimated L_{max}, dBA

> 90.0
85.0 - 90.0
80.0 - 85.0
75.0 - 80.0
70.0 - 75.0
65.0 - 70.0
60.0 - 65.0
55.0 - 60.0
<= 55.0

Signs and symbols

- Property line
- Residential Building
- Construction Zone
- Noise Barrier

N

0 40 80 120 feet

Calculation Date: August 28, 2014

INTERNATIONAL

Assumptions used in the Analysis of Project Operational Noise Levels

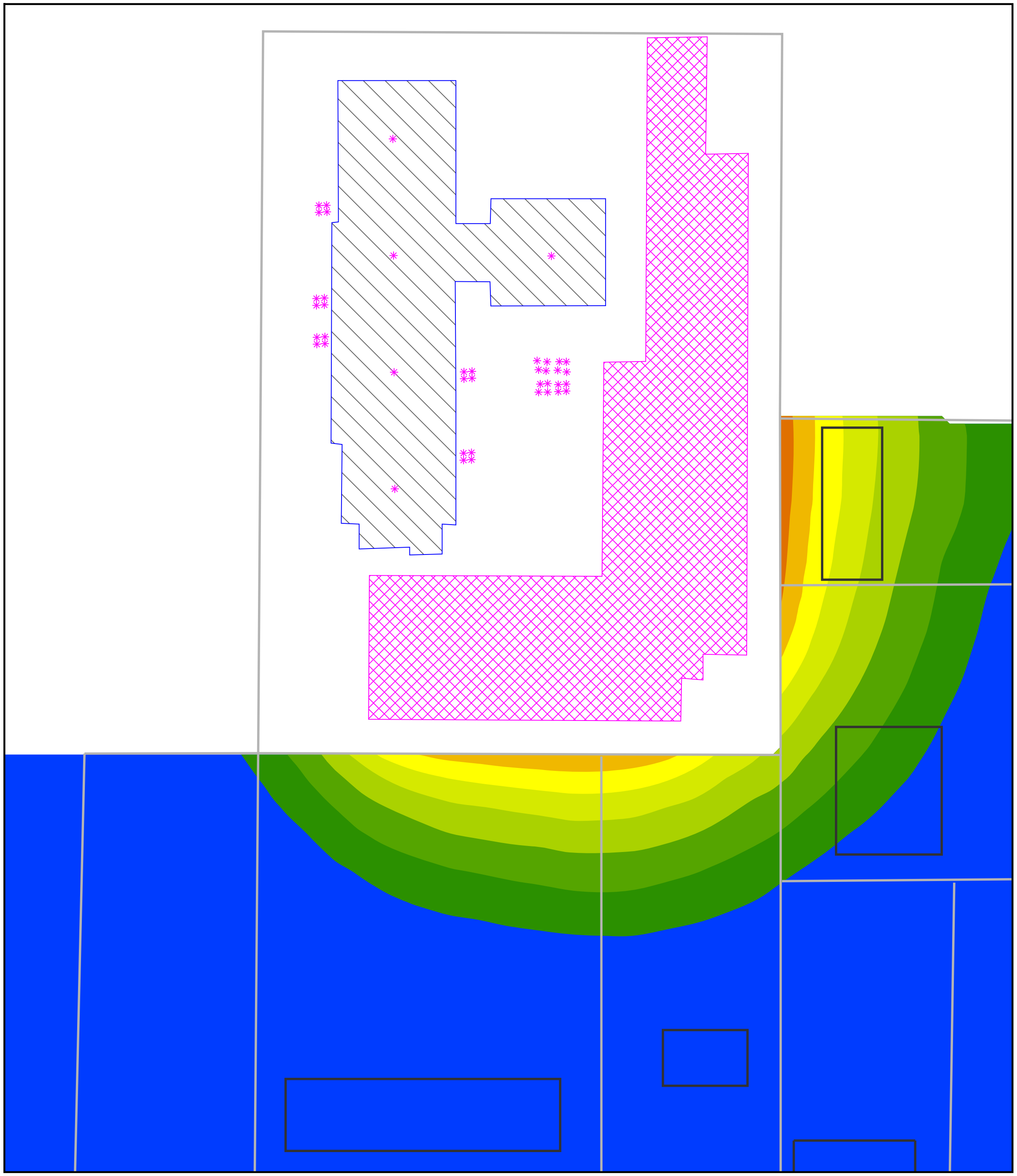
The primary on-site noise sources at the project site would be parking lot activities, mechanical equipment, and activities at the proposed outdoor learning spaces. To analyze the noise levels from these sources, a three-dimensional computer noise model was developed using SoundPLAN software. The geometry for the model was based on the project plans and publicly available aerial photography. The modeling takes into account many important variables, including the sound power of each source, the heights of the noise sources and receptors, the distance to noise-sensitive receptors, site topography, and barrier effects provided by walls and buildings. It is noted that, per the Los Angeles County Code, a “sensitive receptor” is considered to be any location on a residential property.

The following data and assumptions were used in the noise model:

- There would be a total of 92 vehicle movements (44 inbound vehicles and 48 outbound) at the library parking lot in a 1-hour period. This number is based on the weekday peak-hour trip generation data provided by the project traffic engineer. Noise from the parking lot was estimated using the parking lot modeling capabilities of the SoundPLAN software, which predicts noise levels according to the size of the parking lot, the number of parking spaces, and the number of hourly vehicle movements.

- It was assumed there would be five rooftop heating, air-conditioning, and ventilation (HVAC) units operating on the library building. Based on manufacturer’s published noise data for these types of equipment (Trane, 2004), it was estimated that each unit would have a sound power level of 85 dBA.

- It was assumed that a total of 36 people would be distributed throughout the various exterior Learning Courtyard areas of the library (this corresponds to the number of outdoor seats in these areas, as indicated on the project plans). It was assumed that each person would generate an average sound power of 71 dBA. This noise level was selected from the built-in noise source library within SoundPLAN and represents a raised voice, which is considered appropriate for an individual speaking outdoors.



Estimated Unmitigated Noise Levels at Nearby Sensitive Receptors Due to On Site Operations

Estimated L_{50}, dBA

>	58.0
57.0 -	58.0
56.0 -	57.0
55.0 -	56.0
54.0 -	55.0
53.0 -	54.0
52.0 -	53.0
51.0 -	52.0
<=	51.0

Signs and symbols

- Library
- Property line
- Residential Building
- Parking lot
- Point source (HVAC unit or person talking)

N

0 40 80 120 feet

Calculation Date: August 28, 2014

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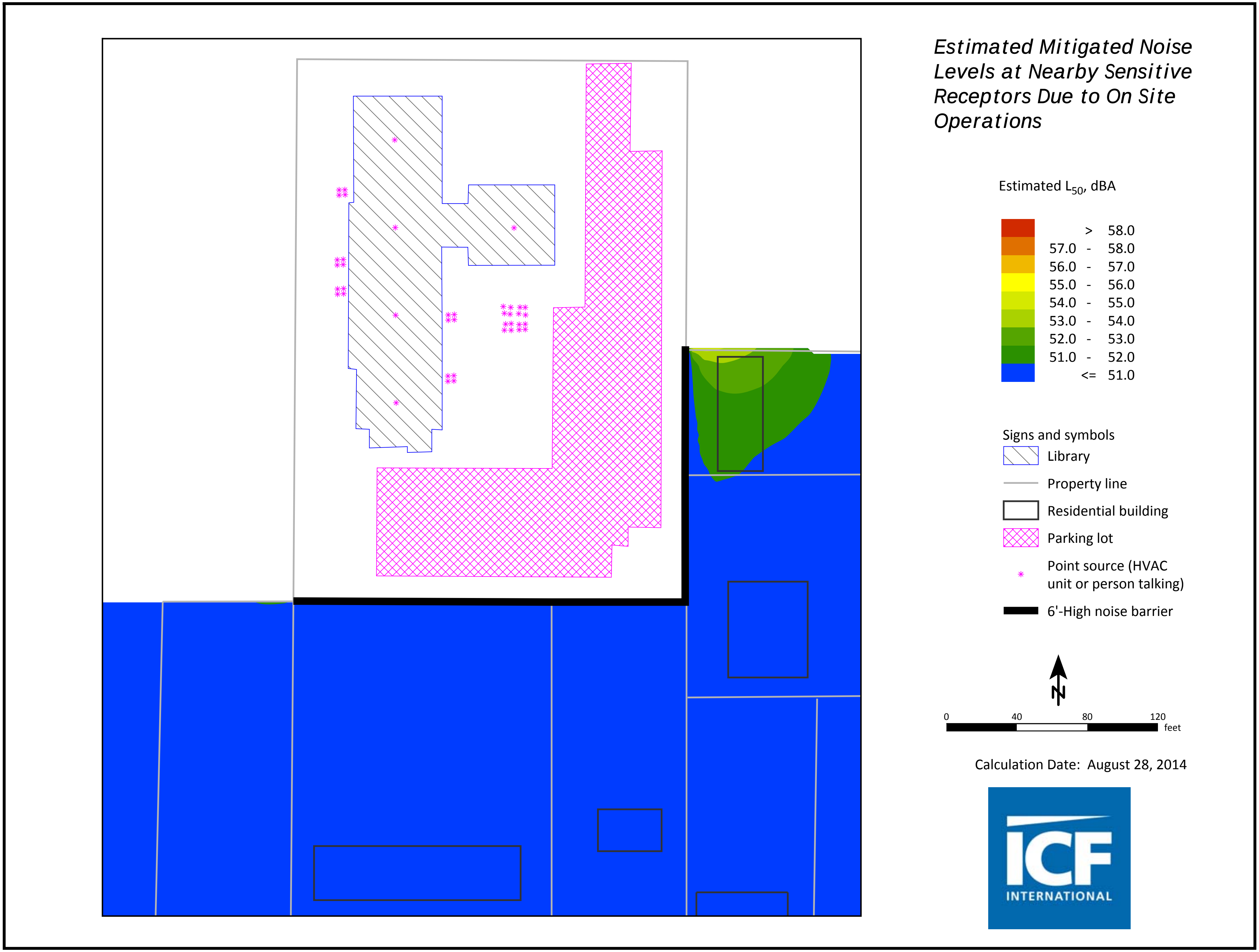
Estimated Mitigated Noise Levels at Nearby Sensitive Receptors Due to On Site Operations
Estimated L_{50}, dBA
> 58.0
57.0 - 58.0
56.0 - 57.0
55.0 - 56.0
54.0 - 55.0
53.0 - 54.0
52.0 - 53.0
51.0 - 52.0
<= 51.0
Signs and symbols
Library
Property line
Residential building
Parking lot
Point source (HVAC unit or person talking)
6'-High noise barrier
N
0
40
80
120
feet
Calculation Date: August 28, 2014
ICF INTERNATIONAL

Appendix F

Traffic Study

Los Angeles County Quartz Hill Library

Draft Transportation Impact Study
In Support of the
Initial Study/Mitigated Negative Declaration (IS/MND)

Prepared for:
ICF Jones & Stokes

Prepared by:
Intueor Consulting, Inc.

September 2014

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Chapter 1 – Introduction

This report, which focuses on potential transportation impacts, is one of a series of technical reports prepared in support of the Initial Study/Mitigated Negative Declaration (IS/MND) for the Los Angeles County Quartz Hill Library. The report identifies the base assumptions, describes the methodologies, and summarizes the findings of the study. The methodology and base assumptions used in this analysis were prepared in close coordination with the County of Los Angeles staff.

1.1 PROJECT DESCRIPTION

The Quartz Hill library project proposes construction and operation of a new public library in the Business District of Quartz Hill, an unincorporated community in the Antelope Valley region of northern Los Angeles County. The County of Los Angeles (County) is the lead agency under the California Environmental Quality Act (CEQA). The new 12,500-square-foot library would be built on an undeveloped 1.75-acre parcel, which is located approximately 150 feet west of 50th Street West on Avenue M-2, a private street. **Figure 1-1** shows the regional vicinity, and **Figure 1-2** provides a project location map.

The one-story library would include a community meeting room, public lobby, customer service desk, and outdoor learning courtyards. On-site parking would be provided in the form of a 55-space surface parking lot, and the site would be improved with landscape and hardscape features. Vehicular access to the library would be from Avenue M-2. The new library would replace the existing 3,530-square-foot Quartz Hill library, which is located in a leased building approximately 0.2 mile north of the project site. The leased building would be surrendered to the landlord upon completion of the proposed project. The establishment of a new library in Quartz Hill to meet the service needs of the anticipated local population is consistent with the County's long-range facility planning. **Figure 1-3** shows the site plan.

Construction is anticipated to begin in July 2015 and be completed within 13 months, including 2 months for installing fixtures, furnishings, and equipment, thus finishing around August 2016.

1.2 PROJECT SCOPE

This traffic analysis evaluates the operation of fifteen (15) study area intersections as potentially being impacted by the proposed project. These study intersections are located within a one-mile radius of the project site and were selected in conjunction with Los Angeles County. These intersection locations are deemed most likely to be impacted due to the proposed project. The fifteen study intersections are presented in the following list.

1. 55th Street W and W Avenue L-8
2. 50th Street W and W Avenue L-8
3. 60th Street W and Columbia Way
4. 55th Street W and Columbia Way
5. 50th Street W and Columbia Way

Figure 1-1: Regional Vicinity Map

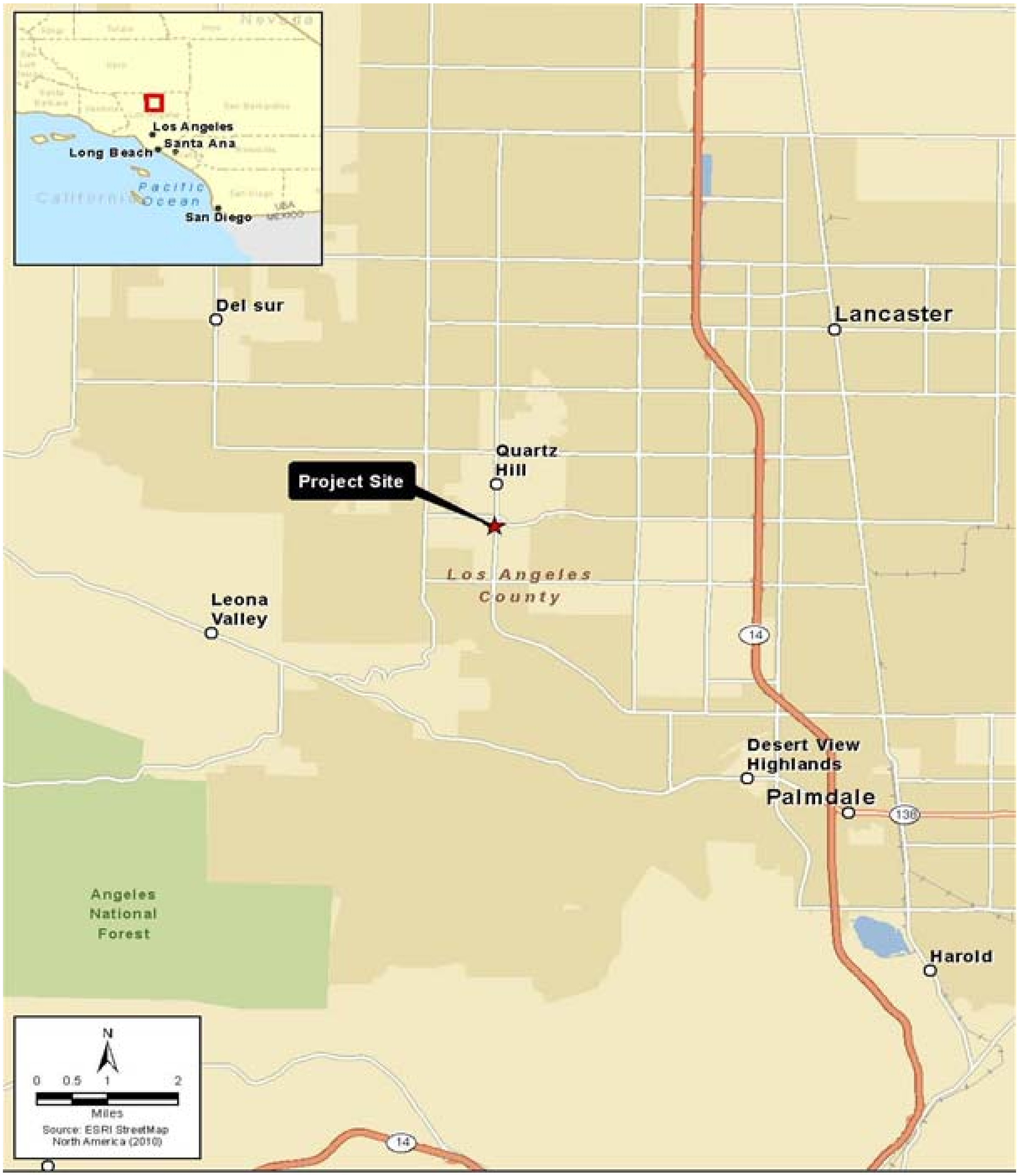


Figure 1-2: Project Location Map

Figure 1-3: Site Plan

Source: MVEI (2014)

NOT TO SCALE

6. 30^{th} Street W and W Avenue M
7. 50^{th} Street W and W Avenue M-4
8. 60^{th} Street W and W Avenue M-8
9. 55^{th} Street W and W Avenue M-8
10. 50^{th} Street W and W Avenue M-8
11. 60^{th} Street W and W Avenue N
12. 55^{th} Street W and W Avenue N
13. 50^{th} Street W and W Avenue N
14. 45^{th} Street W and W Avenue N
15. 45^{th} Street W and W Avenue N

The study intersection locations are presented in **Figure 1-4**.

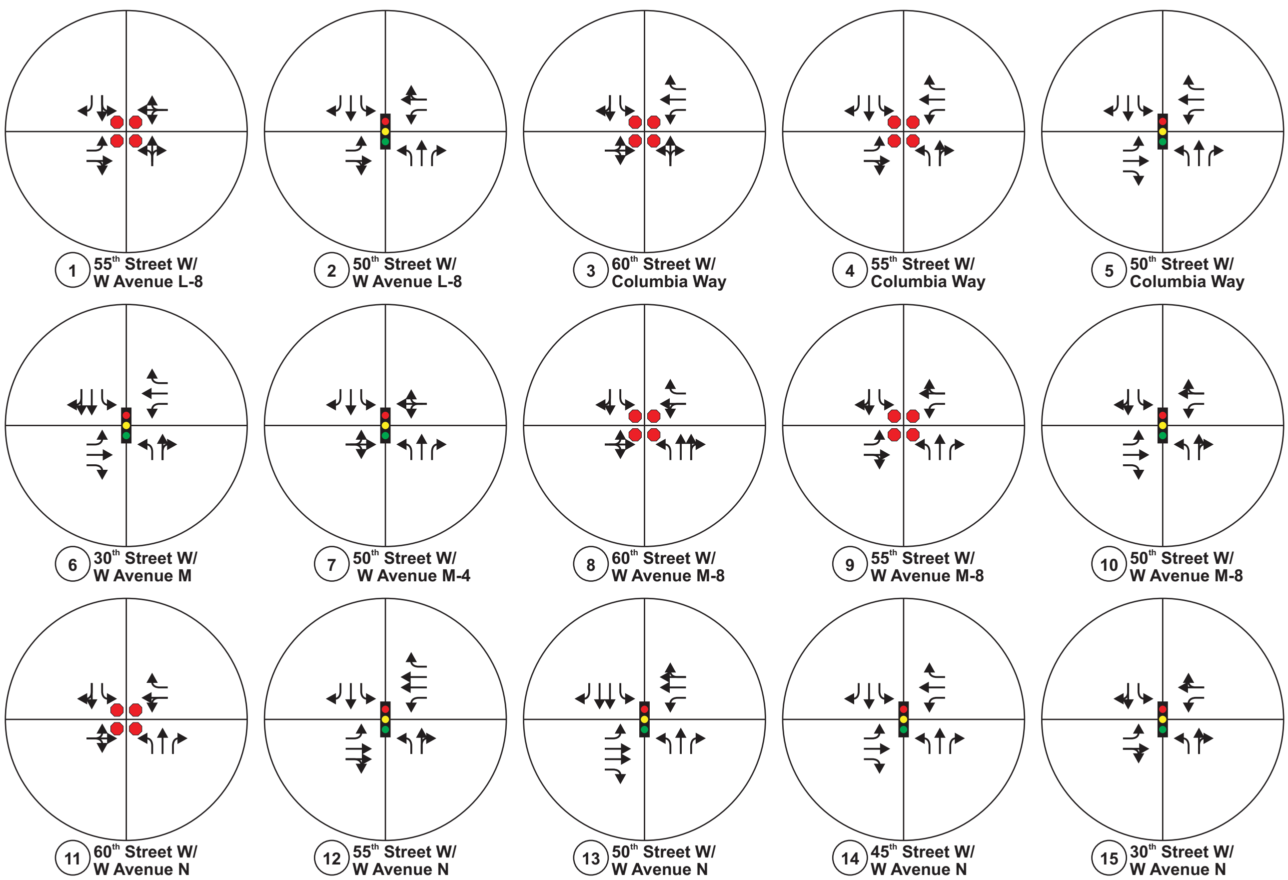


Figure 1-4 : Traffic Analysis Study Locations

1.3 ENVIRONMENTAL SETTING

A field inventory was conducted at the fifteen area intersection locations. The inventory included review of intersection geometric layout, type of traffic control, intersection approach lane configuration, posted speed limits, and on-street parking restrictions. Existing lane configurations and traffic control for the fifteen study intersections are provided in **Figure 1-4**. This information is required for the subsequent traffic analysis.

1.3.1 Analytical Tools and Data Sources

To determine the existing traffic operating conditions in the study area and perform the traffic operations analysis for the opening year of 2016, manual AM and PM peak period turning movement counts were conducted at the intersection locations. The study area is within the County of Los Angeles and adjacent to the City of Lancaster. The intersection turning movement counts were conducted on a representative weekday (Tuesday, Wednesday, or Thursday), with schools in session, in May 2014. As noted earlier, the traffic data was collected at the locations shown in **Figure 1-4**. The peak period intersection turning movement traffic volume count data are presented in **Appendix A**.

1.3.2 Approach to Estimating Transportation Effects

Traffic operating conditions for the study intersections were analyzed according to the transportation impact analysis report guidelines for the County of Los Angeles. Study intersections were analyzed using the Intersection Capacity Utilization (ICU) method of intersection analysis. Volume-to-capacity (V/C) ratios and the corresponding level of service (LOS) were calculated at the study intersections during the AM and PM peak hours. Level of service is a qualitative measure that describes traffic operating and flow conditions. **Table 1-1** presents the LOS definitions for intersections (per the County guidelines).

The CEQA Guidelines define “significant effect” as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project. The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. Under CEQA, every agency in the state “is encouraged to develop and publish thresholds of significance” against which to compare the environmental impacts of projects. Such thresholds are to be published for public review and supported by substantial evidence before their adoption. A lead agency will normally consider the environmental impacts of a project to be significant if, and only if, they exceed established thresholds of significance.

Per the transportation impact analysis report guidelines for the County of Los Angeles, an intersection is considered to be adversely or significantly impacted, due to the proposed project, if the change in V/C from the pre-project condition is equal to or greater than the criteria set forth in **Table 1-2**.

Table 1-1: LOS Definitions for Intersections		
Level of Service	**V/C Range**	**Definition**
A	0.000 – 0.600	EXCELLENT. No vehicle waits longer than one red light and no approach phase are fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the peak hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	>1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Table 1-2: Significant Impact Threshold for Intersections		
Pre-project		**Project V/C Increase**
LOS	**V/C**	
LOS C	0.71 to 0.80	≥ 0.04
LOS D	0.81 to 0.90	≥ 0.02
LOS E/F	0.91 or more	≥ 0.01

Chapter 2 – Existing Conditions

A data collection effort was undertaken to develop a detailed description of existing conditions in the study area. The existing conditions analysis relevant to this traffic study contains an assessment of the existing roadway network, the existing public transit, and the intersection level of service analysis for the existing with and without project scenarios

2.1 EXISTING ROADWAY NETWORK

The discussion presented here is limited to roadways that are approaches to the study intersections or provide regional access. The following list describes the major arterials within the project study area.

- **W Avenue M/Columbia Way** – This is a two-lane undivided major arterial oriented in the east and west directions. Currently it carries about 6,600 vehicles per day.
- **W Avenue M-8** – This is a two-lane undivided secondary arterial oriented in the east and west directions. Currently it carries about 2,500 vehicles per day.
- **W Avenue N** – This is a two- to four-lane divided secondary arterial oriented in the east and west directions. Currently it carries about 11,000 vehicles per day.
- **60th Street W**– This is a two- to three-lane divided secondary arterial oriented in the north and south directions. Currently it carries about 6,900 vehicles per day.
- **50th Street W**– This is a two- to three-lane divided major arterial oriented in the north and south directions. Currently it carries about 11,400 vehicles per day.
- **30th Street W**– This is a two- to three-lane divided major arterial oriented in the north and south directions. Currently it carries about 12,400 vehicles per day.

2.2 EXISTING PUBLIC TRANSIT

The Antelope Valley Transit Authority (AVTA) operates fixed-route bus and dial-a-ride service throughout the high desert area. The following provides a brief description of the bus lines providing service within the study area near the proposed project.

- **Route 5 (Avenue L – Quartz Hill)** – This route serves W Avenue M and 50th Street W with connections to Lancaster City Park.
- **Route 7 (Quartz Hill – West Lancaster / West Palmdale)** – This route serves 50th Street W, 60th Street W, Quartz Hill High with connections at Palmdale Transportation Center and Lancaster Metrolink.

2.3 EXISTING WITHOUT PROJECT INTERSECTION LEVEL OF SERVICE ANALYSIS

The turning movement counts that were collected at the fifteen intersections in the study area were used to evaluate existing without project peak hour traffic conditions. The AM and PM peak hours were identified as the critical time periods for an assessment of existing conditions. Detailed vehicle turning movement count data are presented in **Appendix A** and illustrated in **Figure 2-1**.

Table 2-1 presents the results of the existing without project AM and PM traffic operating conditions and the corresponding LOS at each of the study intersections. The results indicate that only one intersection would operate at LOS F in both the AM and PM peak hours (shaded cells). All the remaining study intersections would operate at LOS D or better. The detailed existing conditions LOS worksheets are presented in **Appendix B**.

Table 2-1: Existing Without Project Intersection LOS Analysis

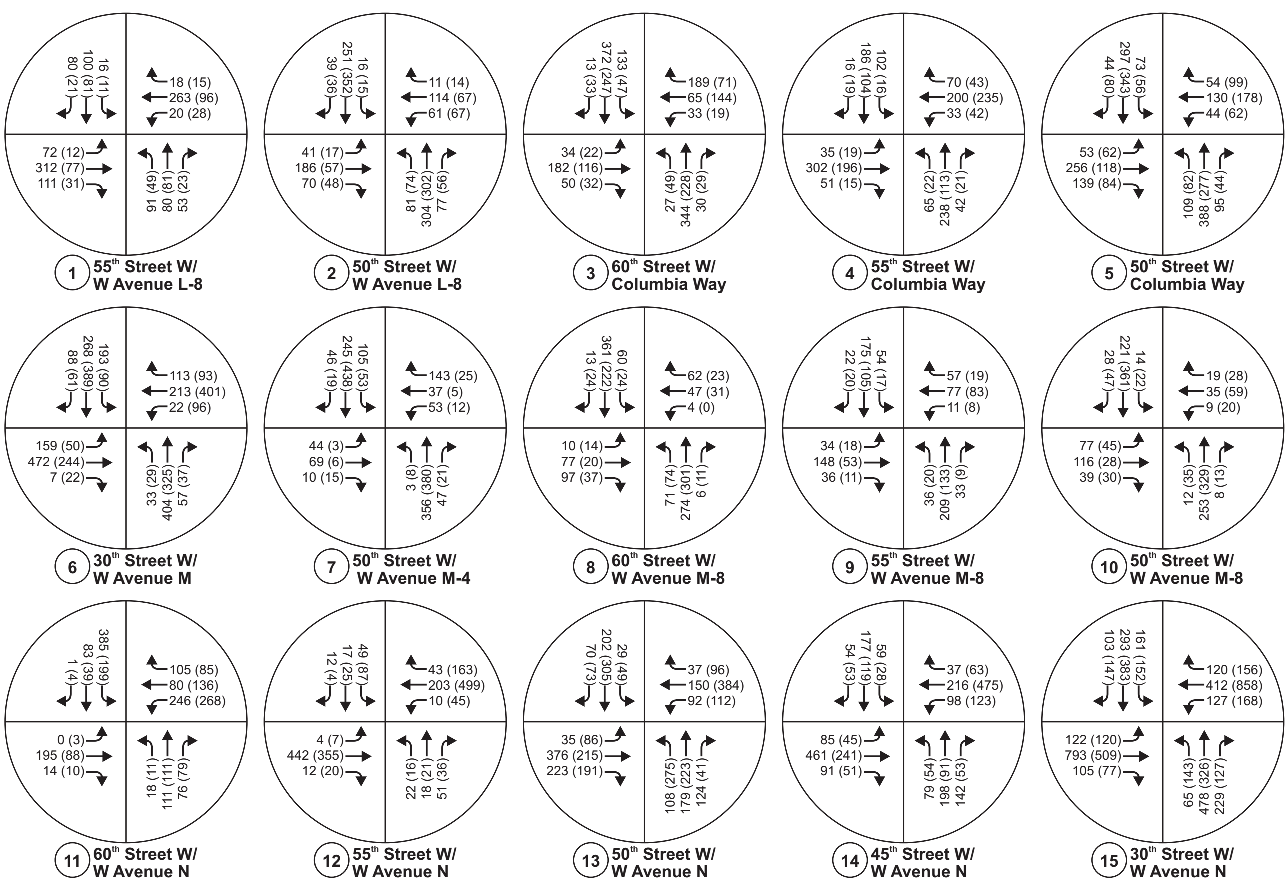
#	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			V/C	LOS	V/C	LOS
1	55th Street W and W Avenue L-8	All-Way Stop	0.510	A	0.296	A
2	50th Street W and W Avenue L-8	Signalized	0.506	A	0.474	A
3	60th Street W and Columbia Way	All-Way Stop	0.660	B	0.483	A
4	55th Street W and Columbia Way	All-Way Stop	0.580	A	0.352	A
5	50th Street W and Columbia Way	Signalized	0.576	A	0.516	A
6	30th Street W and W Avenue M	Signalized	0.817	D	0.664	B
7	50th Street W and W Avenue M-4	Signalized	0.537	A	0.406	A
8	60th Street W and W Avenue M-8	All-Way Stop	0.494	A	0.345	A
9	55th Street W and W Avenue M-8	All-Way Stop	0.386	A	0.269	A
10	50th Street W and W Avenue M-8	Signalized	0.354	A	0.459	A
11	60th Street W and W Avenue N	All-Way Stop	0.768	C	0.563	A
12	55th Street W and W Avenue N	Signalized	0.322	A	0.351	A
13	50th Street W and W Avenue N	Signalized	0.405	A	0.571	A
14	45th Street W and W Avenue N	Signalized	0.610	B	0.533	A
15	30th Street W and W Avenue N	Signalized	1.283	F	1.229	F

2.4 EXISTING WITH PROJECT INTERSECTION LEVEL OF SERVICE ANALYSIS

The existing with project conditions were analyzed based on an estimate of the number of new trips generated by the proposed Quartz Hill Library project. Trip generation estimates for the proposed project were calculated using the trip rates published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition for a "Library" land use code.

2.4.1 Project Trip Generation

The first step in analyzing the "with project" traffic conditions is to estimate the number of new trips expected to be generated by the proposed library project. This section of the report describes the estimation of the future traffic generated by the proposed project.



INTUEOR MAXIMIZING VALUE | Los Angeles County Quartz Hill Library | Figure 2-1 : Existing Without Project AM/PM Peak Hour Traffic Volumes

The proposed project consists of a 12,500-square-foot public library (ITE Code 590 for the Library land use). The proposed library is projected to generate approximately 14 AM peak hour trips (10 in and 4 out) and 92 PM peak hour trips (44 in and 48 out). In addition, the library would generate approximately 703 daily trips. The number of trips generated by the proposed development is shown in **Table 2-2**.

Table 2-2: Project Trip Generation Estimates

ITE Land Use Code	Size	Daily Trips	Weekday AM Peak Hour Trips In	Weekday AM Peak Hour Trips Out	Weekday AM Peak Hour Trips Total	Weekday PM Peak Hour Trips In	Weekday PM Peak Hour Trips Out	Weekday PM Peak Hour Trips Total
Library (590)	12,500 sq. ft.	703	10	4	14	44	48	92

2.4.2 Trip Distribution and Assignment

Trip distribution assumptions are used to determine the origin and destination of new vehicle trips associated with the proposed project. The directional distribution of trips to and from the project site was developed and approved by Los Angeles County and is based on the project access, the local roadway system, and the location of other adjacent land uses that would generate and attract trips to and from the library during the AM and PM peak hours.

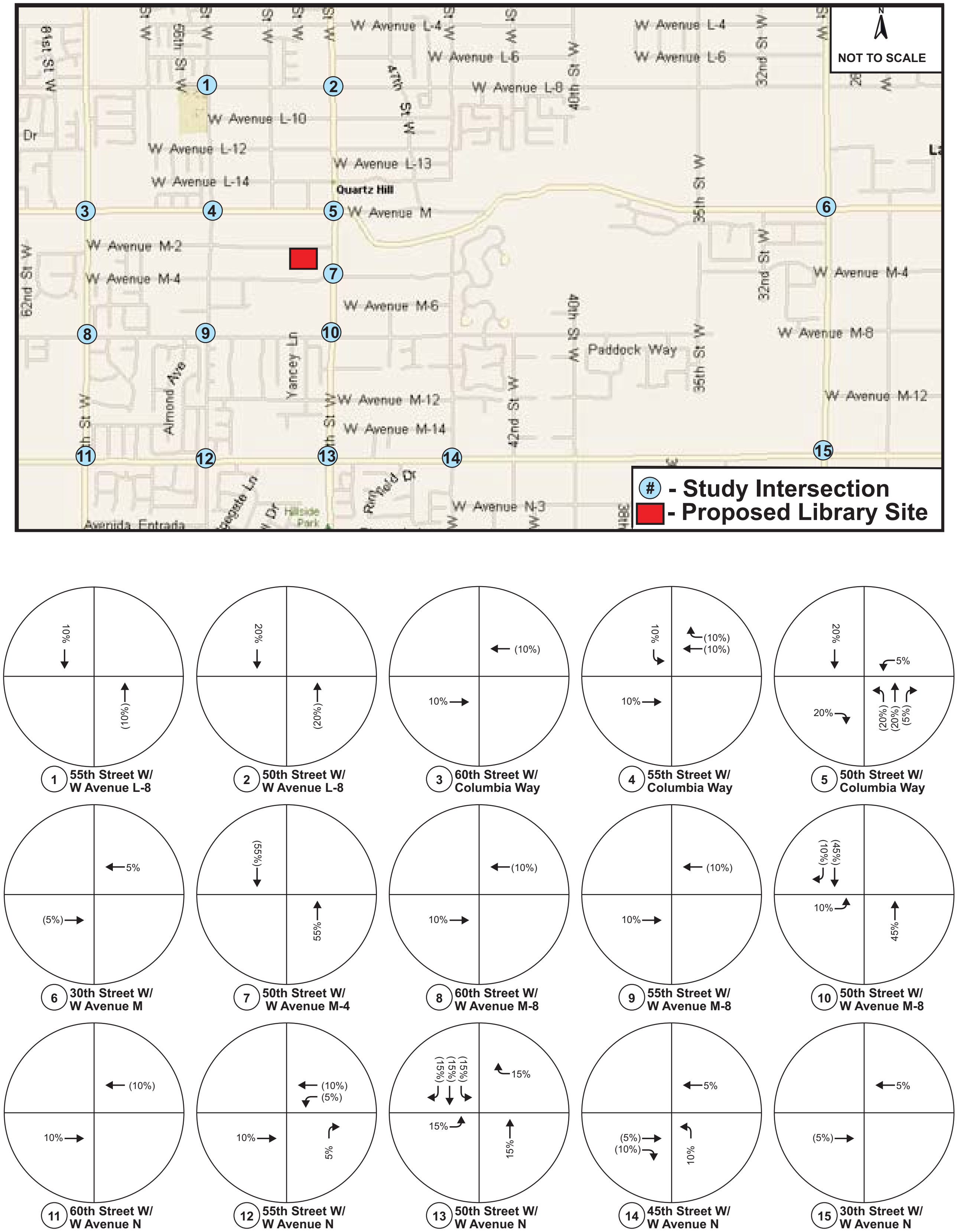
The new trips generated by the project are then assigned to the surrounding roadway and intersection network, based on the trip distribution patterns that were identified and approved by Los Angeles County, resulting in an estimate of the peak hour project traffic at each of the fifteen study intersections. **Figure 2-2** and **Figure 2-3** illustrate the "project only" trip assignment percentages and the "project only" traffic volumes onto the surrounding roadway network during the AM and PM peak hours, respectively. **Figure 2-4** illustrates the combined existing with project traffic volumes during the AM and PM peak hours.

2.4.3 Intersection Level of Service

Table 2-3 presents the results of the AM and PM peak hour traffic operating conditions and corresponding LOS at each of the fifteen study intersections. The results indicate that only one intersection would operate at LOS F in the AM and PM peak hours (shaded cells). The remaining intersections would continue to operate at LOS D or better. The detailed existing conditions LOS worksheets are presented in **Appendix C**.

2.5 SUMMARY OF IMPACTS

Using the threshold criteria presented in **Table 1-2**, the "with project" intersection operating conditions were compared with the "no project" scenario to identify significantly (CEQA) affected locations. **Table 2-4** summarizes the intersection impacts at each of the study locations. As seen in **Table 2-4**, all fifteen study intersections are not anticipated to be significantly impacted as a result of the proposed Quartz Hill Library project.



INTUEOR MAXIMIZING VALUE	Los Angeles County Quartz Hill Library	Figure 2-2 : Project Only Trip Assignment Percentages (In%(Out%))

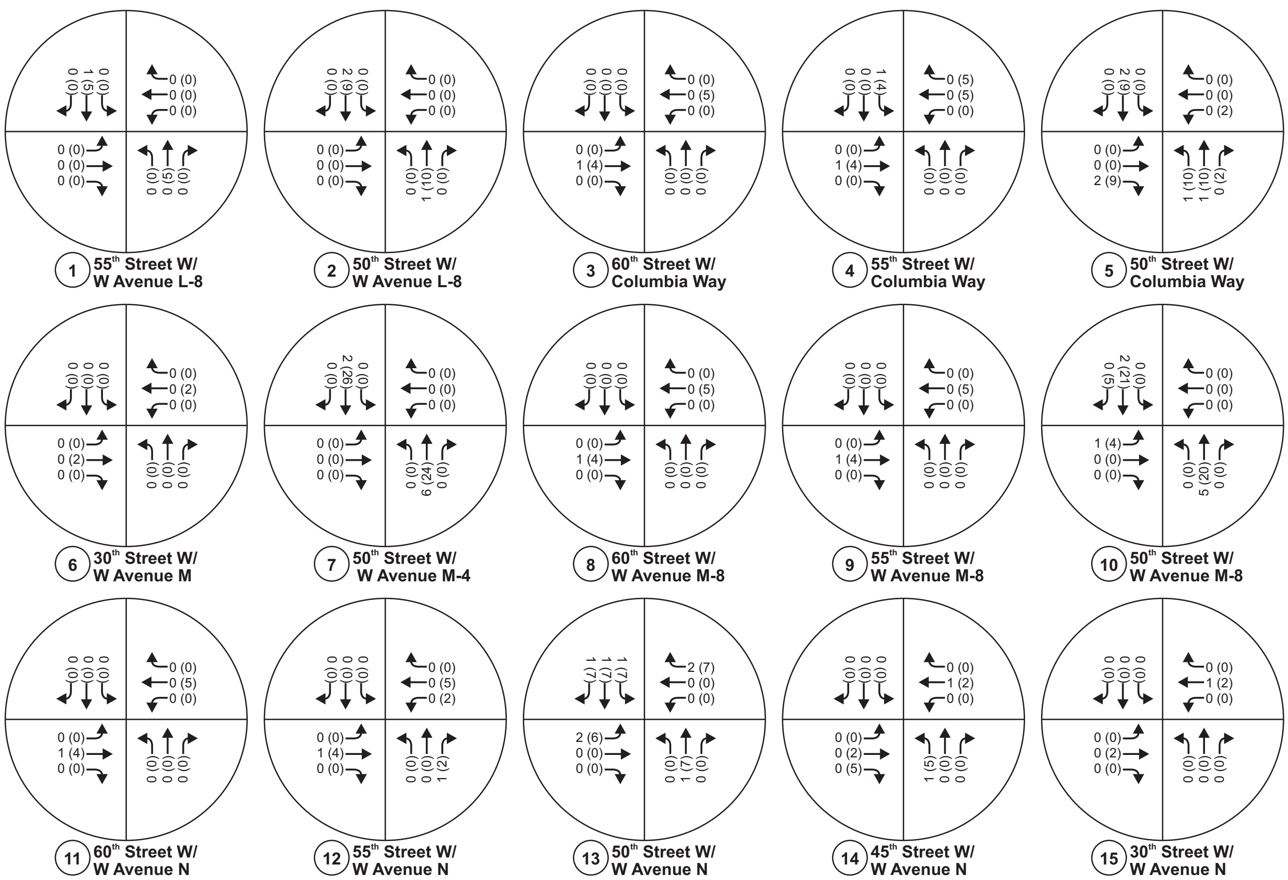
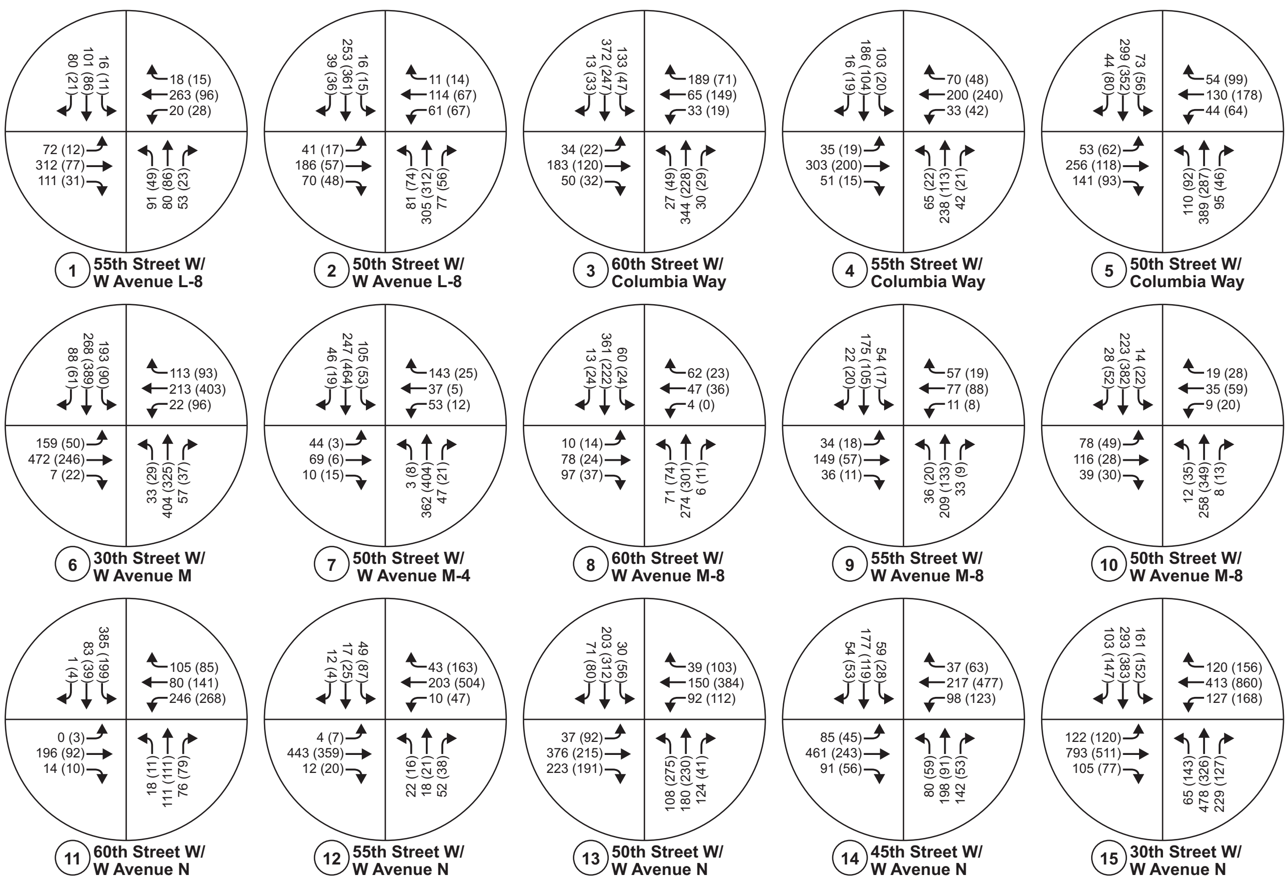


Figure 2-3 : Project Only AM/PM Peak Hour Traffic Volumes



INTUEOR MAXIMIZING VALUE	Los Angeles County Quartz Hill Library	Figure 2-4 : Existing With Project AM/PM Peak Hour Traffic Volumes

Table 2-3: Existing With Project Intersection LOS Analysis						
			AM Peak Hour		PM Peak Hour	
#	Intersection	Control Type	V/C	LOS	V/C	LOS
1	55th Street W and W Avenue L-8	All-Way Stop	0.510	A	0.299	A
2	50th Street W and W Avenue L-8	Signalized	0.507	A	0.480	A
3	60th Street W and Columbia Way	All-Way Stop	0.660	B	0.486	A
4	55th Street W and Columbia Way	All-Way Stop	0.581	A	0.357	A
5	50th Street W and Columbia Way	Signalized	0.576	A	0.528	A
6	30th Street W and W Avenue M	Signalized	0.817	D	0.665	B
7	50th Street W and W Avenue M-4	Signalized	0.541	A	0.422	A
8	60th Street W and W Avenue M-8	All-Way Stop	0.494	A	0.348	A
9	55th Street W and W Avenue M-8	All-Way Stop	0.387	A	0.272	A
10	50th Street W and W Avenue M-8	Signalized	0.358	A	0.478	A
11	60th Street W and W Avenue N	All-Way Stop	0.768	C	0.566	A
12	55th Street W and W Avenue N	Signalized	0.323	A	0.353	A
13	50th Street W and W Avenue N	Signalized	0.406	A	0.579	A
14	45th Street W and W Avenue N	Signalized	0.610	B	0.538	A
15	30th Street W and W Avenue N	Signalized	1.283	F	1.230	F

Table 2-4: Intersection Impacts Comparison - Existing With and Without Project

#	Intersection	Control Type	Peak Hour Analysis	Existing Without Project		Existing With Project		Existing With Project	Significant Impact
				LOS	V/C	LOS	V/C	Change in V/C	
1	55th Street W and W Avenue L-8	All-Way Stop	AM	0.510	A	0.510	A	0.000	NO
			PM	0.296	A	0.299	A	0.003	NO
2	50th Street W and W Avenue L-8	Signalized	AM	0.506	A	0.507	A	0.001	NO
			PM	0.474	A	0.480	A	0.006	NO
3	60th Street W and Columbia Way	All-Way Stop	AM	0.660	B	0.660	B	0.000	NO
			PM	0.483	A	0.486	A	0.003	NO
4	55th Street W and Columbia Way	All-Way Stop	AM	0.580	A	0.581	A	0.001	NO
			PM	0.352	A	0.357	A	0.005	NO
5	50th Street W and Columbia Way	Signalized	AM	0.576	A	0.576	A	0.000	NO
			PM	0.516	A	0.528	A	0.012	NO
6	30th Street W and W Avenue M	Signalized	AM	0.817	D	0.817	D	0.000	NO
			PM	0.664	B	0.665	B	0.001	NO
7	50th Street W and W Avenue M-4	Signalized	AM	0.537	A	0.541	A	0.004	NO
			PM	0.406	A	0.422	A	0.016	NO
8	60th Street W and W Avenue M-8	All-Way Stop	AM	0.494	A	0.494	A	0.000	NO
			PM	0.345	A	0.348	A	0.003	NO
9	55th Street W and W Avenue M-8	All-Way Stop	AM	0.386	A	0.387	A	0.001	NO
			PM	0.269	A	0.272	A	0.003	NO
10	50th Street W and W Avenue M-8	Signalized	AM	0.354	A	0.358	A	0.004	NO
			PM	0.459	A	0.478	A	0.019	NO

11	60th Street W and W Avenue N	All-Way Stop	AM	0.768	C	0.768	C	0.000	NO
			PM	0.563	A	0.566	A	0.003	NO
12	55th Street W and W Avenue N	Signalized	AM	0.322	A	0.323	A	0.001	NO
			PM	0.351	A	0.353	A	0.002	NO
13	50th Street W and W Avenue N	Signalized	AM	0.405	A	0.406	A	0.001	NO
			PM	0.571	A	0.579	A	0.008	NO
14	45th Street W and W Avenue N	Signalized	AM	0.610	B	0.610	B	0.000	NO
			PM	0.533	A	0.538	A	0.005	NO
15	30th Street W and W Avenue N	Signalized	AM	1.283	F	1.283	F	0.000	NO
			PM	1.229	F	1.230	F	0.001	NO

Chapter 3 – Opening Year (2016) Conditions

The opening year (2016) conditions scenario consists of an evaluation of the opening year (2016) with and without project condition at the fifteen study intersections.

3.1 OPENING YEAR (2016) WITHOUT PROJECT CONDITIONS

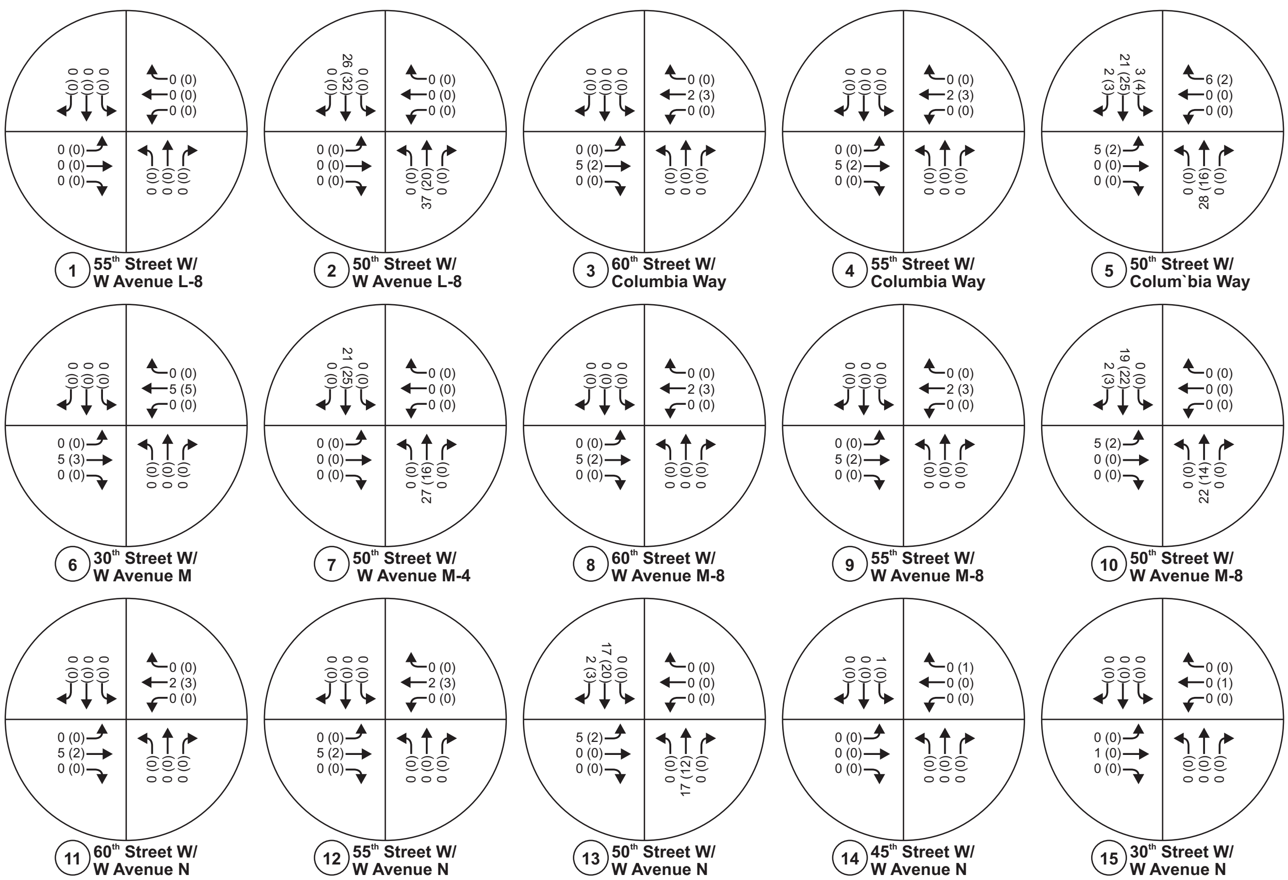
Future background traffic is defined as expected non-project traffic on the roadway network in the future year at buildout of the proposed project. For the purposes of this analysis, it was determined that 2016 would be the opening year of the project, and therefore, 2016 conditions were evaluated as the "future" year scenario.

As directed by Los Angeles County staff, opening year (2016) background traffic forecasts were determined using traffic due to other known or related future development projects. Per the traffic study guidelines for Los Angeles County, this growth in traffic is expected to occur from other future development projects that are within a 1.5-mile radius of the proposed project site. These "cumulative" or related projects are those developments that are planned, programmed and/or funded and are expected to be in place within the same timeframe as the proposed project. A list of the related projects information was provided by the County of Los Angeles and the peak hour trips generated by these related projects were included in the determination of the future background volumes. The resulting AM and PM peak hour trips generated by the related projects are shown in **Table 3-1**. **Figure 3-1** shows the distribution of the opening year (2016) related projects peak hour traffic volumes during the AM and PM peak hours**.**

Table 3-1: Trip Generation Estimates for Related Projects[1]

			Weekday					
			AM Peak Hour Trips			PM Peak Hour Trips		
Project	Location	Land Use	In	Out	Total	In	Out	Total
1	4748 W Ave M-12	Single-Family Detached	0	1	1	1	0	1
2	NE corner of 50th St W/W Ave L-2	Retail/Service Station/Carwash	49	44	93	34	41	75
3	SW corner of 50th St W/W Ave N	General Office	11	1	12	2	10	12
4	South of 47th St between Ave M & Quartz Hill Rd	Single-Family Detached	2	5	7	6	3	9
		Total	62	51	113	43	54	97

[1] Provided by Los Angeles County



INTUEOR MAXIMIZING VALUE	Los Angeles County Quartz Hill Library	Figure 3-1 : Opening Year (2016) Related Projects AM/PM Peak Hour Traffic Volumes

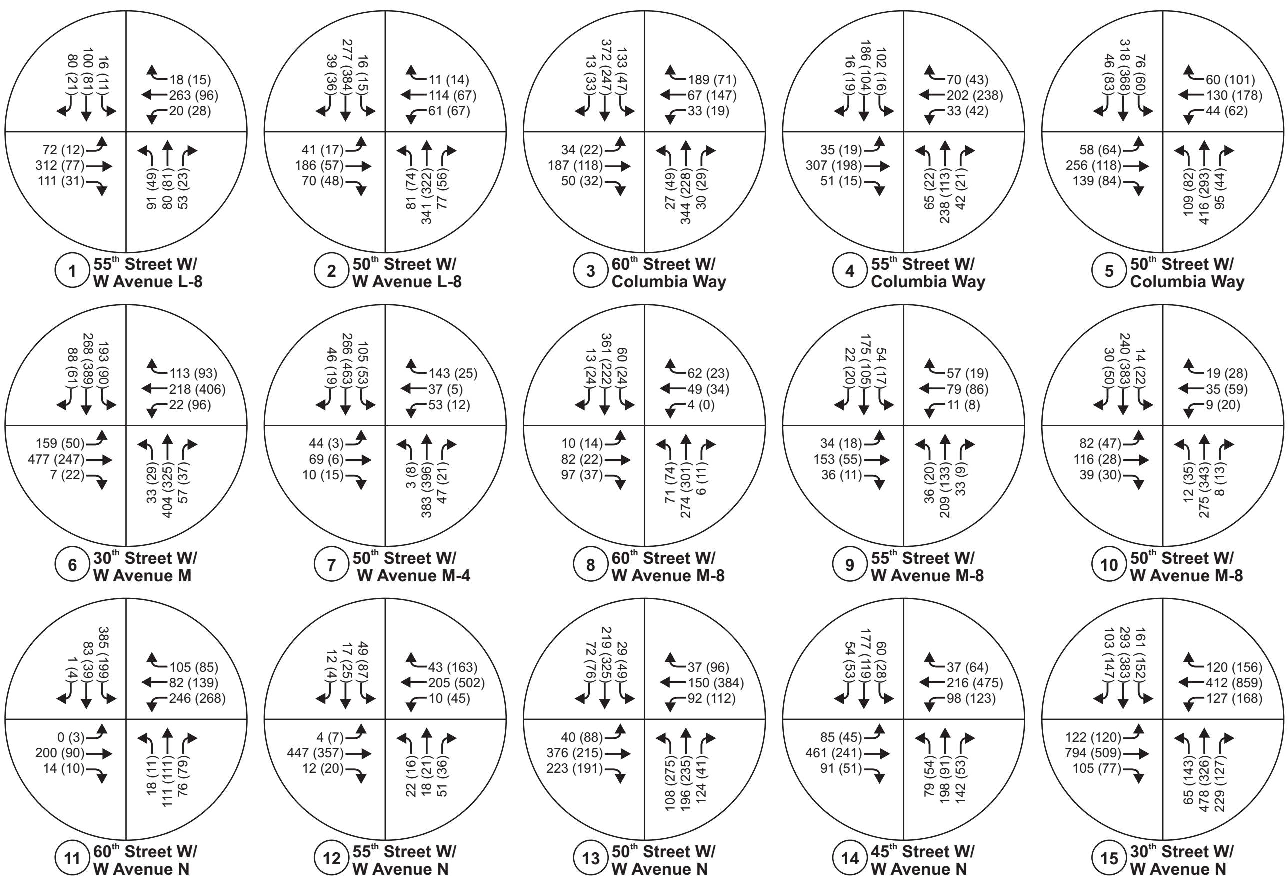
Trips generated by the related projects were added to the existing traffic volumes. **Figure 3-2** shows the opening year (2016) without project peak hour traffic volumes during the AM and PM peak hours.

3.1.1 Intersection Level of Service Analysis

Table 3-2 presents the results of the AM and PM peak hour traffic operating conditions and corresponding LOS at each of the fifteen study intersections. The results indicate that only one intersection would operate at LOS F in the AM and PM peak hours (shaded cells). The remaining study intersections would operate at LOS D or better. The detailed opening year without project LOS worksheets are presented in **Appendix D**.

Table 3-2: Opening Year (2016) Without Project Intersection LOS Analysis

#	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			V/C	LOS	V/C	LOS
1	55th Street W and W Avenue L-8	All-Way Stop	0.510	A	0.296	A
2	50th Street W and W Avenue L-8	Signalized	0.522	A	0.494	A
3	60th Street W and Columbia Way	All-Way Stop	0.663	B	0.484	A
4	55th Street W and Columbia Way	All-Way Stop	0.583	A	0.353	A
5	50th Street W and Columbia Way	Signalized	0.595	A	0.533	A
6	30th Street W and W Avenue M	Signalized	0.821	D	0.667	B
7	50th Street W and W Avenue M-4	Signalized	0.554	A	0.421	A
8	60th Street W and W Avenue M-8	All-Way Stop	0.497	A	0.347	A
9	55th Street W and W Avenue M-8	All-Way Stop	0.389	A	0.271	A
10	50th Street W and W Avenue M-8	Signalized	0.371	A	0.476	A
11	60th Street W and W Avenue N	All-Way Stop	0.769	C	0.565	A
12	55th Street W and W Avenue N	Signalized	0.323	A	0.352	A
13	50th Street W and W Avenue N	Signalized	0.416	A	0.578	A
14	45th Street W and W Avenue N	Signalized	0.611	B	0.533	A
15	30th Street W and W Avenue N	Signalized	1.284	F	1.229	F



INTUEOR MAXIMIZING VALUE | Los Angeles County Quartz Hill Library | Figure 3-2 : Opening Year (2016) Without Project AM/PM Peak Hour Traffic Volumes

3.2 OPENING YEAR (2016) WITH PROJECT CONDITIONS

The future opening year (2016) with project conditions were analyzed based on an estimate of the number of new trips generated by the proposed Quartz Hill Library project and the list of related projects. The trips generated by the proposed project were presented earlier in Section 2.4.1.

3.2.1 Intersection Level of Service Analysis

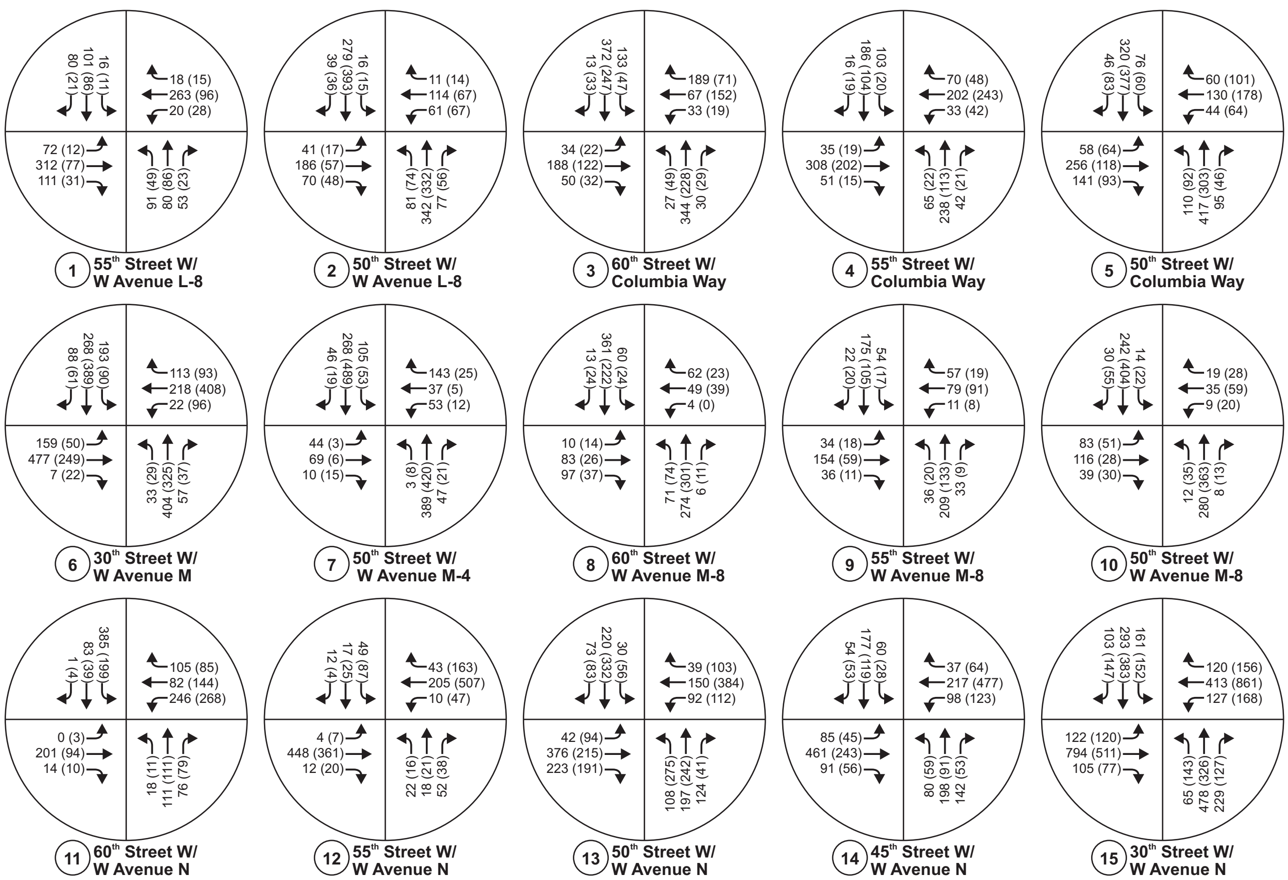
Table 3-3 presents the results of the AM and PM peak hour traffic operating conditions and corresponding LOS at each of the fifteen study intersections. The results indicate that only one intersection would operate at LOS F in the AM and PM peak hours (shaded cells). The remaining intersections would operate at LOS D or better. The detailed opening year without project LOS worksheets are presented in **Appendix E**.

Table 3-3: Opening Year (2016) With Project Intersection LOS Analysis

#	Intersection	Control Type	AM Peak Hour		PM Peak Hour	
			V/C	LOS	V/C	LOS
1	55th Street W and W Avenue L-8	All-Way Stop	0.510	A	0.299	A
2	50th Street W and W Avenue L-8	Signalized	0.523	A	0.500	A
3	60th Street W and Columbia Way	All-Way Stop	0.663	B	0.487	A
4	55th Street W and Columbia Way	All-Way Stop	0.584	A	0.359	A
5	50th Street W and Columbia Way	Signalized	0.596	A	0.544	A
6	30th Street W and W Avenue M	Signalized	0.821	D	0.669	B
7	50th Street W and W Avenue M-4	Signalized	0.558	A	0.438	A
8	60th Street W and W Avenue M-8	All-Way Stop	0.497	A	0.349	A
9	55th Street W and W Avenue M-8	All-Way Stop	0.390	A	0.274	A
10	50th Street W and W Avenue M-8	Signalized	0.375	A	0.495	A
11	60th Street W and W Avenue N	All-Way Stop	0.769	C	0.568	A
12	55th Street W and W Avenue N	Signalized	0.325	A	0.354	A
13	50th Street W and W Avenue N	Signalized	0.417	A	0.586	A
14	45th Street W and W Avenue N	Signalized	0.611	B	0.538	A
15	30th Street W and W Avenue N	Signalized	1.284	F	1.231	F

3.3 SUMMARY OF IMPACTS

Using the threshold criteria presented in **Table 1-2**, the "with project" intersection operating conditions were compared with the "no project" scenario to identify significantly (CEQA) affected locations. **Table 3-4** summarizes the intersection impacts at each of the study locations. As shown in **Table 3-4**, all fifteen study intersections are not anticipated to be significantly impacted as a result of the proposed Quartz Hill Library project.



INTUEOR MAXIMIZING VALUE	Los Angeles County Quartz Hill Library	Figure 3-3 : Opening Year (2016) With Project AM/PM Peak Hour Traffic Volumes

Table 3-4: Intersection Impacts Comparison - Opening Year (2016) With and Without Project

#	Intersection	Control Type	Peak Hour Analysis	2016 Without Project		2016 With Project		2016 With Project	Significant Impact
				LOS	V/C	LOS	V/C	Change in V/C	
1	55th Street W and W Avenue L-8	All-Way Stop	AM	0.510	A	0.510	A	0.000	NO
			PM	0.296	A	0.299	A	0.003	NO
2	50th Street W and W Avenue L-8	Signalized	AM	0.522	A	0.523	A	0.001	NO
			PM	0.494	A	0.500	A	0.006	NO
3	60th Street W and Columbia Way	All-Way Stop	AM	0.663	B	0.663	B	0.000	NO
			PM	0.484	A	0.487	A	0.003	NO
4	55th Street W and Columbia Way	All-Way Stop	AM	0.583	A	0.584	A	0.001	NO
			PM	0.353	A	0.359	A	0.006	NO
5	50th Street W and Columbia Way	Signalized	AM	0.595	A	0.596	A	0.001	NO
			PM	0.533	A	0.544	A	0.011	NO
6	30th Street W and W Avenue M	Signalized	AM	0.821	D	0.821	D	0.000	NO
			PM	0.667	B	0.669	B	0.002	NO
7	50th Street W and W Avenue M-4	Signalized	AM	0.554	A	0.558	A	0.004	NO
			PM	0.421	A	0.438	A	0.017	NO
8	60th Street W and W Avenue M-8	All-Way Stop	AM	0.497	A	0.497	A	0.000	NO
			PM	0.347	A	0.349	A	0.002	NO
9	55th Street W and W Avenue M-8	All-Way Stop	AM	0.389	A	0.390	A	0.001	NO
			PM	0.271	A	0.274	A	0.003	NO
10	50th Street W and W Avenue M-8	Signalized	AM	0.371	A	0.375	A	0.004	NO
			PM	0.476	A	0.495	A	0.019	NO

11	60th Street W and W Avenue N	All-Way Stop	AM	0.769	C	0.769	C	0.000	NO
			PM	0.565	A	0.568	A	0.003	NO
12	55th Street W and W Avenue N	Signalized	AM	0.323	A	0.325	A	0.002	NO
			PM	0.352	A	0.354	A	0.002	NO
13	50th Street W and W Avenue N	Signalized	AM	0.416	A	0.417	A	0.001	NO
			PM	0.578	A	0.586	A	0.008	NO
14	45th Street W and W Avenue N	Signalized	AM	0.611	B	0.611	B	0.000	NO
			PM	0.533	A	0.538	A	0.005	NO
15	30th Street W and W Avenue N	Signalized	AM	0.410	A	0.411	A	0.001	NO
			PM	0.277	A	0.280	A	0.003	NO

3.4 ACCESS AND CIRCULATION

Access to the site will be via one (1) full access driveway along Avenue M-2. Inbound traffic will be permitted from eastbound and westbound Avenue M-2. Outbound traffic is proposed to be directed eastbound and westbound onto Avenue M-2 by permitting both right and left turn movements.

3.5 CONGESTION MANAGEMENT PROGRAM (CMP) ANALYSIS

An analysis of the regional transportation facilities in the vicinity of the project was conducted in accordance with the traffic impact analysis (TIA) procedures outlined in the *2010 Congestion Management Program* (Los Angeles Metro, 2010). The CMP requires that a TIA be performed for all arterial monitoring intersections where a project would add 50 or more trips during either the morning or afternoon weekday peak hour and all mainline freeway monitoring locations where a project would add 150 or more trips (in either direction) during the morning or afternoon weekday peak hours. It also requires a review of the future transit capacity after implementation of a project.

3.5.1 CMP Intersection Analysis

The project is not expected to add 50 or more peak hour trips on to the nearest arterial monitoring intersection. Therefore, the project would not result in a significant traffic impact at any CMP arterial monitoring intersections under any of the analysis scenarios.

3.5.2 CMP Freeway Analysis

The project is not expected to add 150 or more peak hour trips, in either direction, on to the nearest freeway mainline monitoring location. Therefore, the project would not result in a significant traffic impact at any CMP freeway monitoring location under any of the analysis scenarios.

3.5.3 CMP Transit Analysis

The CMP presents a methodology for estimating the number of transit trips, which are anticipated from a project, based on the number of vehicle trips that are generated. This methodology assumes an average vehicle ridership factor of 1.4 to estimate the number of person trips traveling to and from a project.

Based on the CMP methodology, it is estimated that approximately 3.5% of these person trips may use public transit to travel to and from the proposed library project. As a result, the project would generate approximately 1 new transit trip in the weekday AM peak hour and 5 new transit trips in the weekday PM peak hour. Since the library project location is served by multiple transit routes, no significant impacts on the regional transit systems are expected with this minimal level of potential increase in transit trips.

Chapter 4 – Conclusions

The proposed public library site is located in the southwest corner of the intersection of 50th Street and Avenue M-2 in the Business District of Quartz Hill, an unincorporated community in the Antelope Valley region of northern Los Angeles County. The proposed project consists of a 12,500-square-foot public library. The project site is currently vacant. Vehicular access to the site is anticipated to be provided through one (1) full access driveway on Avenue M-2 accommodating both ingress and egress movements. The proposed opening year for the project is anticipated to be around August 2016.

A traffic evaluation was prepared and a peak hour intersection level of service analysis was conducted at fifteen study locations for the existing and future conditions to determine the potential traffic impacts of the proposed project on the existing roadway network. The results of the traffic analyses demonstrated that the fifteen study intersections are expected to operate at acceptable levels of service for the future traffic conditions during both the AM and PM peak hours. The proposed Quartz Hill Library project will not significantly impact the transportation environment surrounding the project site.

Los Angeles County Quartz Hill Library

Appendices for the Draft Transportation Impact Study
In Support of the
Initial Study/Mitigated Negative Declaration (IS/MND)

Prepared for:
ICF Jones & Stokes

Prepared by:
Intueor Consulting, Inc.

September 2014

Appendix A
Intersection Turning Movement Counts

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969 info@wiltecusa.com

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	55TH STREET WEST
	E/W	WEST AVENUE L 8
CITY:		QUARTZ HILL

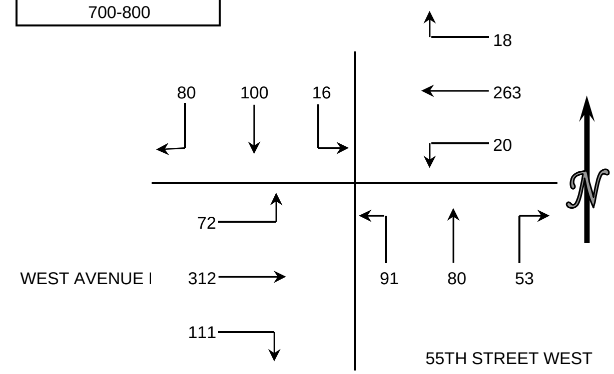
15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	16	27	3	1	70	4	9	10	27	22	66	8	263
715-730	15	26	8	5	70	11	13	23	23	34	92	12	332
730-745	25	32	5	6	70	3	16	25	27	28	78	24	339
745-800	24	15	0	6	53	2	15	22	14	27	76	28	282
800-815	4	13	2	4	17	1	3	19	3	8	11	5	90
815-830	4	9	1	1	12	2	3	15	10	2	24	2	85
830-845	5	13	0	3	6	4	1	11	4	1	9	1	58
845-900	5	16	2	1	13	1	4	15	7	3	7	4	78

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	80	100	16	18	263	20	53	80	91	111	312	72	1216
715-815	68	86	15	21	210	17	47	89	67	97	257	69	1043
730-830	57	69	8	17	152	8	37	81	54	65	189	59	796
745-845	37	50	3	14	88	9	22	67	31	38	120	36	515
800-900	18	51	5	9	48	8	11	60	24	14	51	12	311

PEAK HOUR
700-800



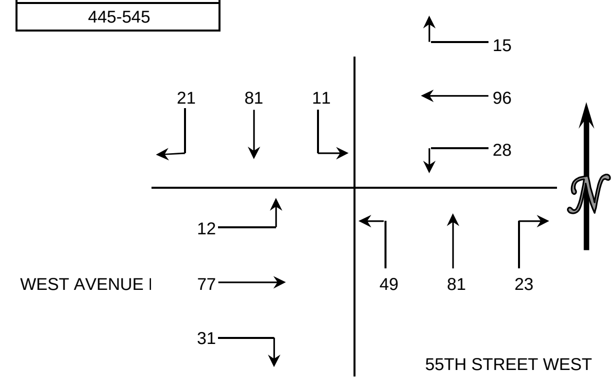
15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	9	20	1	3	26	6	4	18	12	8	19	7	133
415-430	5	21	1	2	28	7	7	22	13	4	26	1	137
430-445	3	20	3	3	24	6	4	16	10	8	15	2	114
445-500	6	20	4	4	32	8	5	17	7	6	22	4	135
500-515	2	28	1	2	20	5	6	20	12	10	25	3	134
515-530	4	15	2	4	19	7	6	22	13	7	10	4	113
530-545	9	18	4	5	25	8	6	22	17	8	20	1	143
545-600	6	12	3	1	25	10	9	22	6	5	21	4	124

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	23	81	9	12	110	27	20	73	42	26	82	14	519
415-515	16	89	9	11	104	26	22	75	42	28	88	10	520
430-530	15	83	10	13	95	26	21	75	42	31	72	13	496
445-545	21	81	11	15	96	28	23	81	49	31	77	12	525
500-600	21	73	10	12	89	30	27	86	48	30	76	12	514

PEAK HOUR
445-545



WILTEC

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

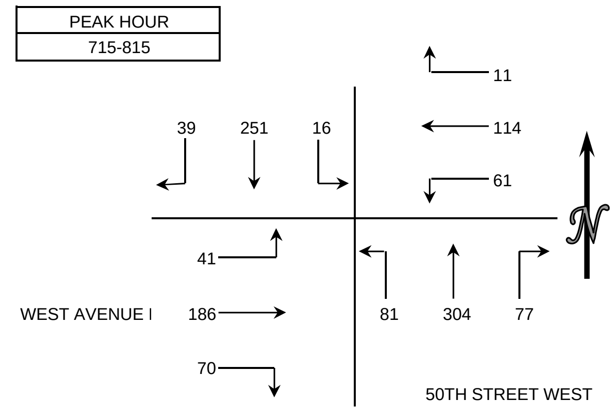
CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	50TH STREET WEST
	E/W	WEST AVENUE L 8
CITY:		QUARTZ HILL

15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	2	30	5	3	19	11	12	56	8	12	32	6	196
715-730	9	89	6	3	27	23	15	71	17	20	57	10	347
730-745	9	62	7	4	41	14	17	88	28	20	60	12	362
745-800	12	50	3	1	33	12	31	95	23	18	48	15	341
800-815	9	50	0	3	13	12	14	50	13	12	21	4	201
815-830	13	40	4	1	19	7	7	48	16	7	15	3	180
830-845	7	48	3	3	11	9	11	40	12	7	9	4	164
845-900	6	39	2	1	12	7	8	47	13	6	8	6	155

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	32	231	21	11	120	60	75	310	76	70	197	43	1246
715-815	39	251	16	11	114	61	77	304	81	70	186	41	1251
730-830	43	202	14	9	106	45	69	281	80	57	144	34	1084
745-845	41	188	10	8	76	40	63	233	64	44	93	26	886
800-900	35	177	9	8	55	35	40	185	54	32	53	17	700

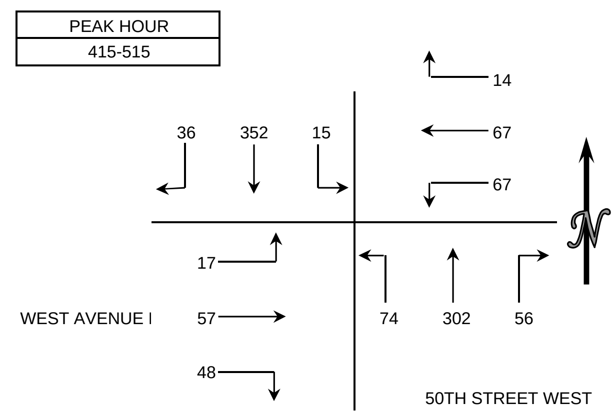


15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	10	90	1	6	12	11	17	78	13	10	13	5	266
415-430	4	94	5	3	22	12	10	74	12	9	12	2	259
430-445	11	95	2	4	20	22	12	73	17	14	13	3	286
445-500	11	81	5	4	13	16	14	78	25	15	14	8	284
500-515	10	82	3	3	12	17	20	77	20	10	18	4	276
515-530	10	88	2	2	22	16	18	51	14	12	13	8	256
530-545	13	87	5	1	10	7	18	74	15	14	13	8	265
545-600	11	78	2	5	16	10	8	75	18	11	9	4	247

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	36	360	13	17	67	61	53	303	67	48	52	18	1095
415-515	36	352	15	14	67	67	56	302	74	48	57	17	1105
430-530	42	346	12	13	67	71	64	279	76	51	58	23	1102
445-545	44	338	15	10	57	56	70	280	74	51	58	28	1081
500-600	44	335	12	11	60	50	64	277	67	47	53	24	1044



WILTEC

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

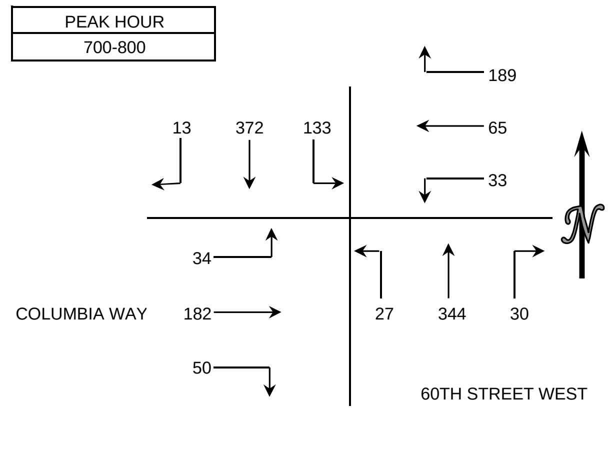
CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		WEDNESDAY MAY 28, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	60TH STREET WEST
	E/W	COLUMBIA WAY
CITY:		QUARTZ HILL

15 MIN COUNTS — **7:00 AM TO 9:00 AM**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	3	84	24	66	21	4	5	99	4	8	44	6	368
715-730	3	128	58	77	14	8	6	82	8	18	38	7	447
730-745	4	99	25	21	12	11	11	88	10	14	54	14	363
745-800	3	61	26	25	18	10	8	75	5	10	46	7	294
800-815	2	44	14	9	10	2	6	28	3	5	29	4	156
815-830	1	31	15	8	14	4	5	25	6	6	23	2	140
830-845	1	42	14	7	13	4	4	18	7	4	22	15	151
845-900	8	32	13	5	11	5	2	24	6	2	22	2	132

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	13	372	133	189	65	33	30	344	27	50	182	34	1472
715-815	12	332	123	132	54	31	31	273	26	47	167	32	1260
730-830	10	235	80	63	54	27	30	216	24	35	152	27	953
745-845	7	178	69	49	55	20	23	146	21	25	120	28	741
800-900	12	149	56	29	48	15	17	95	22	17	96	23	579

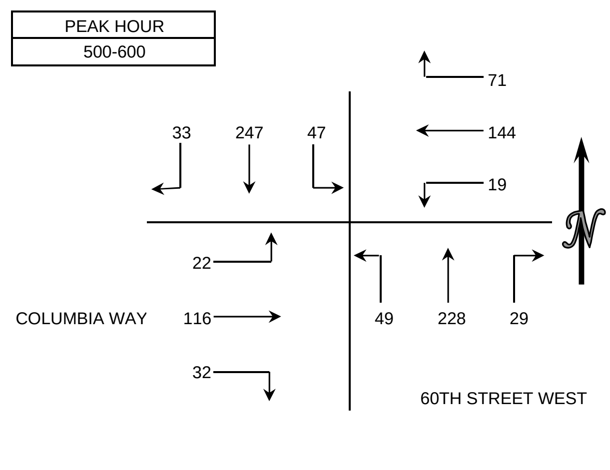


15 MIN COUNTS — **0**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	1	52	9	18	33	5	2	53	10	13	23	7	226
415-430	4	38	11	10	37	5	6	40	13	5	26	5	200
430-445	3	44	13	15	49	3	10	52	6	11	37	4	247
445-500	6	54	18	14	43	7	4	58	10	4	25	8	251
500-515	6	60	13	19	29	0	6	56	16	7	30	6	248
515-530	3	53	15	15	35	8	6	62	9	10	29	4	249
530-545	9	67	15	22	39	4	6	53	9	7	25	7	263
545-600	15	67	4	15	41	7	11	57	15	8	32	5	277

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	14	188	51	57	162	20	22	203	39	33	111	24	924
415-515	19	196	55	58	158	15	26	206	45	27	118	23	946
430-530	18	211	59	63	156	18	26	228	41	32	121	22	995
445-545	24	234	61	70	146	19	22	229	44	28	109	25	1011
500-600	33	247	47	71	144	19	29	228	49	32	116	22	1037



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

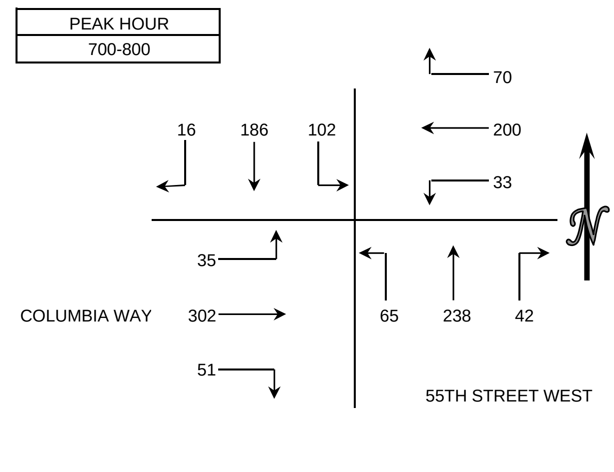
CLIENT: INTUEOR CONSULTING, INC.
PROJECT: QUARTZ HILL TRAFFIC COUNTS
DATE: WEDNESDAY MAY 28, 2014
PERIOD: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S 55TH STREET WEST
E/W COLUMBIA WAY
CITY: QUARTZ HILL

15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	6	41	20	17	60	4	8	43	22	15	78	5	319
715-730	4	48	34	11	46	11	12	63	31	11	90	7	368
730-745	3	56	36	31	52	14	8	68	5	16	81	12	382
745-800	3	41	12	11	42	4	14	64	7	9	53	11	271
800-815	5	11	11	5	25	11	9	21	4	6	52	3	163
815-830	2	8	2	4	26	2	4	12	1	4	38	1	104
830-845	2	11	4	3	19	5	6	12	4	1	50	2	119
845-900	4	18	3	3	24	4	9	24	2	2	50	3	146

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	16	186	102	70	200	33	42	238	65	51	302	35	1340
715-815	15	156	93	58	165	40	43	216	47	42	276	33	1184
730-830	13	116	61	51	145	31	35	165	17	35	224	27	920
745-845	12	71	29	23	112	22	33	109	16	20	193	17	657
800-900	13	48	20	15	94	22	28	69	11	13	190	9	532

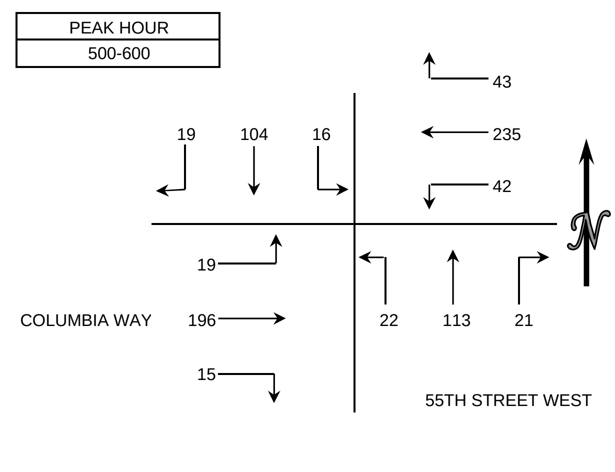


15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	11	18	8	4	73	8	3	23	4	3	59	5	219
415-430	5	14	5	11	49	10	4	19	5	5	51	3	181
430-445	4	18	7	5	52	10	8	22	5	5	50	4	190
445-500	4	16	4	7	51	17	13	20	3	10	47	5	197
500-515	6	32	8	14	55	7	7	26	2	5	59	3	224
515-530	3	25	4	6	59	10	4	29	8	4	39	4	195
530-545	4	27	0	16	60	14	6	28	8	2	57	3	225
545-600	6	20	4	7	61	11	4	30	4	4	41	9	201

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	24	66	24	27	225	45	28	84	17	23	207	17	787
415-515	19	80	24	37	207	44	32	87	15	25	207	15	792
430-530	17	91	23	32	217	44	32	97	18	24	195	16	806
445-545	17	100	16	43	225	48	30	103	21	21	202	15	841
500-600	19	104	16	43	235	42	21	113	22	15	196	19	845



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

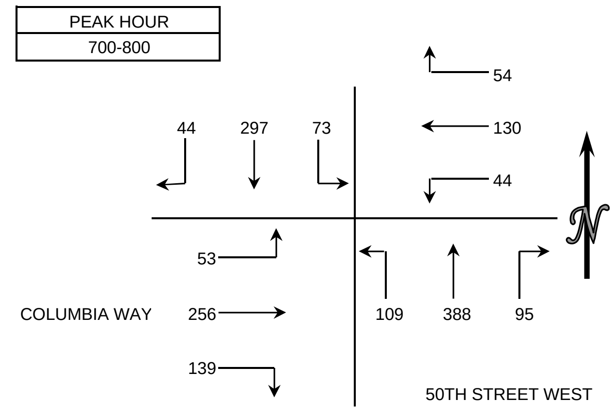
CLIENT: INTUEOR CONSULTING, INC.
PROJECT: QUARTZ HILL TRAFFIC COUNTS
DATE: THURSDAY MAY 29, 2014
PERIOD: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S 50TH STREET WEST
E/W COLUMBIA WAY
CITY: QUARTZ HILL

15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	13	56	16	12	26	5	13	46	10	27	49	11	284
715-730	16	99	23	11	40	12	24	97	25	40	75	8	470
730-745	9	82	17	11	34	15	36	120	43	47	80	12	506
745-800	6	60	17	20	30	12	22	125	31	25	52	22	422
800-815	9	48	10	13	26	2	8	49	11	14	41	15	246
815-830	4	42	10	10	14	7	8	55	7	13	33	14	217
830-845	9	43	12	11	15	5	11	68	13	18	42	11	258
845-900	10	39	12	12	18	6	8	47	11	17	40	12	232

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	44	297	73	54	130	44	95	388	109	139	256	53	1682
715-815	40	289	67	55	130	41	90	391	110	126	248	57	1644
730-830	28	232	54	54	104	36	74	349	92	99	206	63	1391
745-845	28	193	49	54	85	26	49	297	62	70	168	62	1143
800-900	32	172	44	46	73	20	35	219	42	62	156	52	953

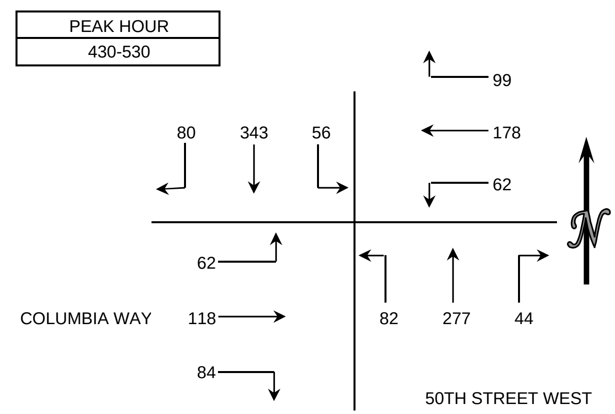


15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	14	80	15	20	46	5	9	84	17	19	12	15	336
415-430	18	78	6	22	49	11	9	90	11	13	33	12	352
430-445	23	83	13	36	44	17	9	20	13	15	22	10	305
445-500	19	80	10	26	42	12	13	98	22	29	37	22	410
500-515	17	81	17	18	59	18	14	81	24	22	30	17	398
515-530	21	99	16	19	33	15	8	78	23	18	29	13	372
530-545	15	70	11	16	36	10	4	95	10	11	5	11	294
545-600	9	78	12	16	47	13	11	66	12	15	7	10	296

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	74	321	44	104	181	45	40	292	63	76	104	59	1403
415-515	77	322	46	102	194	58	45	289	70	79	122	61	1465
430-530	80	343	56	99	178	62	44	277	82	84	118	62	1485
445-545	72	330	54	79	170	55	39	352	79	80	101	63	1474
500-600	62	328	56	69	175	56	37	320	69	66	71	51	1360



WILTEC

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

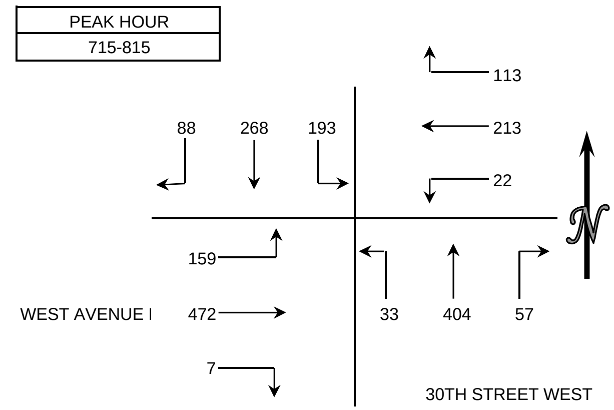
CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	30TH STREET WEST
	E/W	WEST AVENUE M
CITY:		QUARTZ HILL

15 MIN COUNTS — **7:00 AM TO 9:00 AM**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	10	41	17	20	41	8	3	29	6	5	61	16	257
715-730	16	74	49	22	60	4	10	79	9	1	141	37	502
730-745	24	69	61	64	63	7	22	123	14	2	126	60	635
745-800	39	76	50	17	39	3	13	106	4	2	116	41	506
800-815	9	49	33	10	51	8	12	96	6	2	89	21	386
815-830	7	51	22	13	29	2	16	53	1	5	91	20	310
830-845	10	53	17	6	32	5	15	47	2	3	65	17	272
845-900	13	48	10	8	41	5	23	64	2	5	85	9	313

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	89	260	177	123	203	22	48	337	33	10	444	154	1900
715-815	88	268	193	113	213	22	57	404	33	7	472	159	2029
730-830	79	245	166	104	182	20	63	378	25	11	422	142	1837
745-845	65	229	122	46	151	18	56	302	13	12	361	99	1474
800-900	39	201	82	37	153	20	66	260	11	15	330	67	1281

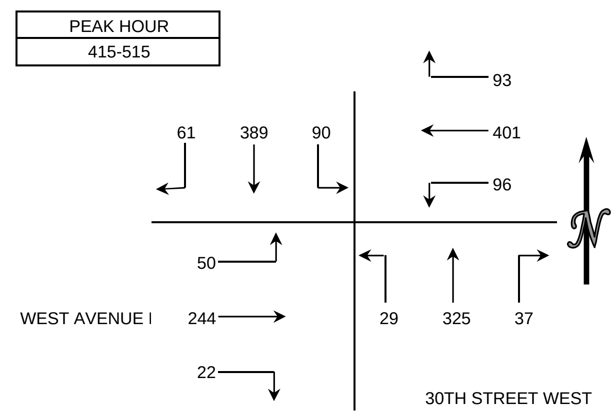


15 MIN COUNTS — **0**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	10	96	21	19	78	19	15	77	11	2	62	19	429
415-430	21	97	35	22	128	22	15	91	5	4	68	11	519
430-445	15	92	16	14	85	12	9	70	9	2	48	17	389
445-500	15	88	19	23	94	27	8	65	8	8	56	10	421
500-515	10	112	20	34	94	35	5	99	7	8	72	12	508
515-530	17	84	27	27	91	18	4	77	4	4	64	21	438
530-545	14	87	20	23	97	13	8	93	3	3	70	17	448
545-600	14	80	15	20	61	10	12	110	5	4	38	12	381

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	61	373	91	78	385	80	47	303	33	16	234	57	1758
415-515	61	389	90	93	401	96	37	325	29	22	244	50	1837
430-530	57	376	82	98	364	92	26	311	28	22	240	60	1756
445-545	56	371	86	107	376	93	25	334	22	23	262	60	1815
500-600	55	363	82	104	343	76	29	379	19	19	244	62	1775



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: INTUEOR CONSULTING, INC.
PROJECT: QUARTZ HILL TRAFFIC COUNTS
DATE: THURSDAY MAY 29, 2014
PERIOD: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S 50TH STREET WEST
E/W WEST AVENUE M 4
CITY: QUARTZ HILL

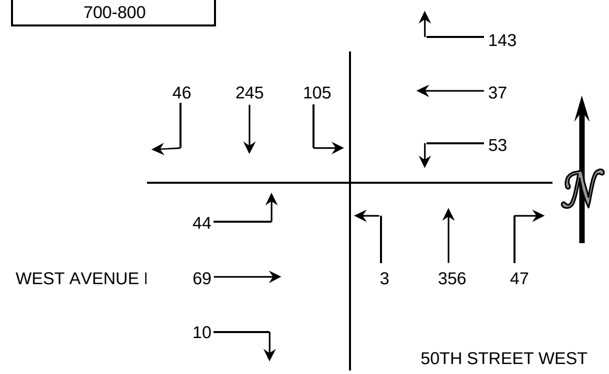
15 MIN COUNTS **7:00 AM TO 9:00 AM**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	10	49	21	21	5	12	4	74	1	1	17	4	219
715-730	12	87	33	38	10	14	13	81	1	2	13	15	319
730-745	15	53	33	57	12	17	22	103	1	4	25	18	360
745-800	9	56	18	27	10	10	8	98	0	3	14	7	260
800-815	4	62	4	9	2	5	1	60	0	3	2	3	155
815-830	1	60	3	5	0	0	0	52	1	0	0	2	124
830-845	2	47	2	2	0	1	1	50	1	0	0	1	107
845-900	0	54	3	3	0	0	1	73	1	0	0	1	136

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	46	245	105	143	37	53	47	356	3	10	69	44	1158
715-815	40	258	88	131	34	46	44	342	2	12	54	43	1094
730-830	29	231	58	98	24	32	31	313	2	10	41	30	899
745-845	16	225	27	43	12	16	10	260	2	6	16	13	646
800-900	7	223	12	19	2	6	3	235	3	3	2	7	522

PEAK HOUR
700-800



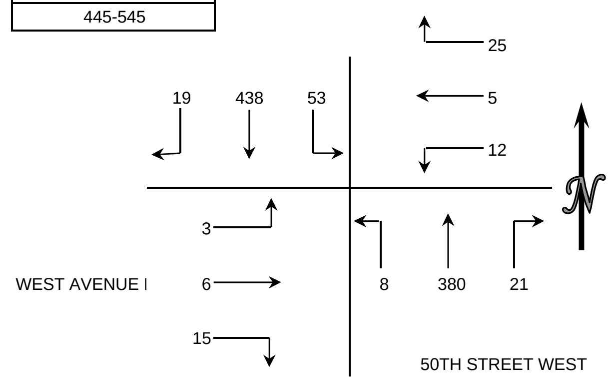
15 MIN COUNTS **0**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	4	82	8	9	3	5	9	92	1	0	2	4	219
415-430	5	94	3	5	1	4	1	90	4	3	2	4	216
430-445	4	102	10	7	1	2	4	92	2	2	1	5	232
445-500	7	127	20	11	0	3	6	90	4	2	1	1	272
500-515	4	111	12	5	0	2	11	88	3	2	2	1	241
515-530	2	102	10	7	2	1	2	95	1	7	1	1	231
530-545	6	98	11	2	3	6	2	107	0	4	2	0	241
545-600	2	87	9	7	3	2	4	84	2	0	0	4	204

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	20	405	41	32	5	14	20	364	11	7	6	14	939
415-515	20	434	45	28	2	11	22	360	13	9	6	11	961
430-530	17	442	52	30	3	8	23	365	10	13	5	8	976
445-545	19	438	53	25	5	12	21	380	8	15	6	3	985
500-600	14	398	42	21	8	11	19	374	6	13	5	6	917

PEAK HOUR
445-545



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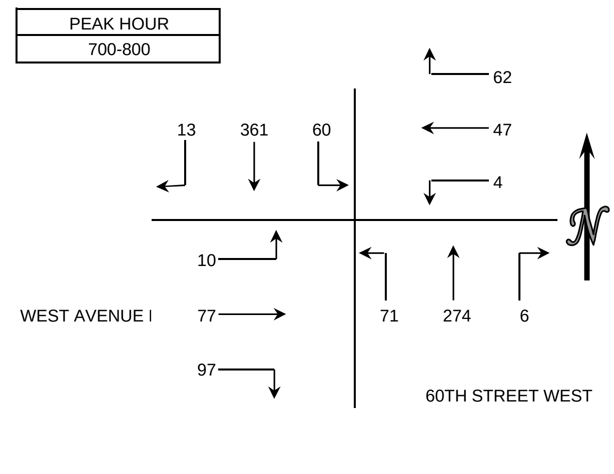
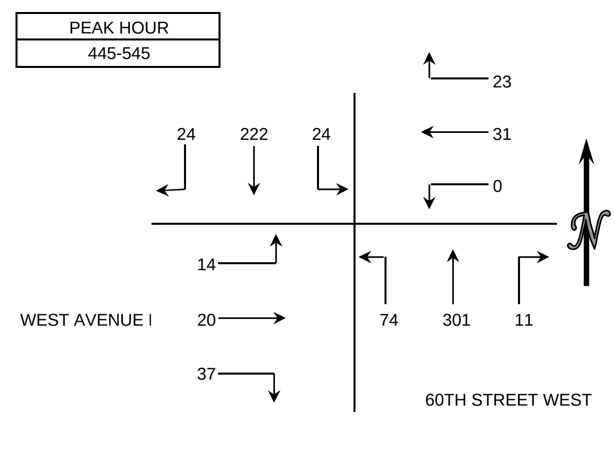
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		WEDNESDAY MAY 28, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	60TH STREET WEST
	E/W	WEST AVENUE M-8
CITY:		QUARTZ HILL

15 MIN COUNTS						7:00 AM TO 9:00 AM							
	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	2	94	8	23	16	0	1	70	30	27	15	1	287
715-730	2	110	27	25	13	1	1	67	13	29	24	2	314
730-745	3	86	20	12	10	1	4	77	14	28	27	4	286
745-800	6	71	5	2	8	2	0	60	14	13	11	3	195
800-815	1	44	8	3	4	3	3	30	6	10	8	2	122
815-830	0	34	6	2	1	2	2	26	4	9	10	4	100
830-845	1	53	2	1	6	0	2	22	9	13	8	4	121
845-900	2	33	2	3	1	1	2	27	5	5	5	3	89
HOUR TOTALS													
	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	13	361	60	62	47	4	6	274	71	97	77	10	1082
715-815	12	311	60	42	35	7	8	234	47	80	70	11	917
730-830	10	235	39	19	23	8	9	193	38	60	56	13	703
745-845	8	202	21	8	19	7	7	138	33	45	37	13	538
800-900	4	164	18	9	12	6	9	105	24	37	31	13	432



15 MIN COUNTS						0							
	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	7	55	7	2	6	1	1	57	19	11	5	3	174
415-430	3	42	3	3	6	1	1	62	18	6	8	5	158
430-445	2	47	4	8	4	1	2	45	15	6	8	3	145
445-500	7	53	7	4	9	0	2	77	20	11	6	4	200
500-515	4	58	2	6	6	0	6	85	15	6	4	2	194
515-530	6	55	7	6	10	0	3	71	18	10	5	5	196
530-545	7	56	8	7	6	0	0	68	21	10	5	3	191
545-600	5	61	5	5	12	0	2	61	21	18	3	3	196
HOUR TOTALS													
	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	19	197	21	17	25	3	6	241	72	34	27	15	677
415-515	16	200	16	21	25	2	11	269	68	29	26	14	697
430-530	19	213	20	24	29	1	13	278	68	33	23	14	735
445-545	24	222	24	23	31	0	11	301	74	37	20	14	781
500-600	22	230	22	24	34	0	11	285	75	44	17	13	777



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: INTUEOR CONSULTING, INC.
PROJECT: QUARTZ HILL TRAFFIC COUNTS
DATE: TUESDAY MAY 27, 2014
PERIOD: 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION: N/S 55TH STREET WEST
E/W WEST AVENUE M-8
CITY: QUARTZ HILL

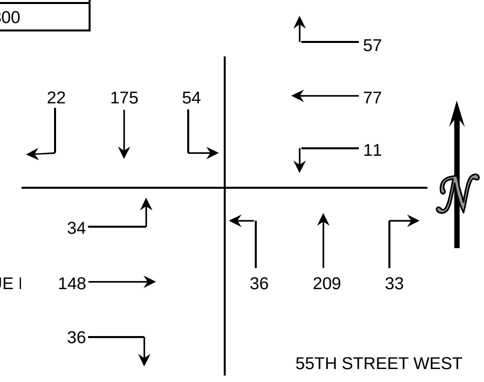
15 MIN COUNTS — **7:00 AM TO 9:00 AM**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	4	48	4	15	26	2	4	52	9	7	18	5	194
715-730	2	56	18	20	22	4	9	60	10	16	58	10	285
730-745	11	38	25	14	19	5	15	60	11	12	52	13	275
745-800	5	33	7	8	10	0	5	37	6	1	20	6	138
800-815	2	17	4	0	6	0	0	24	1	3	21	6	84
815-830	1	9	1	3	8	1	0	16	2	3	17	1	62
830-845	0	8	0	1	9	1	2	12	1	0	10	5	49
845-900	3	14	0	1	9	1	0	12	5	3	9	3	60

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	22	175	54	57	77	11	33	209	36	36	148	34	892
715-815	20	144	54	42	57	9	29	181	28	32	151	35	782
730-830	19	97	37	25	43	6	20	137	20	19	110	26	559
745-845	8	67	12	12	33	2	7	89	10	7	68	18	333
800-900	6	48	5	5	32	3	2	64	9	9	57	15	255

PEAK HOUR
700-800



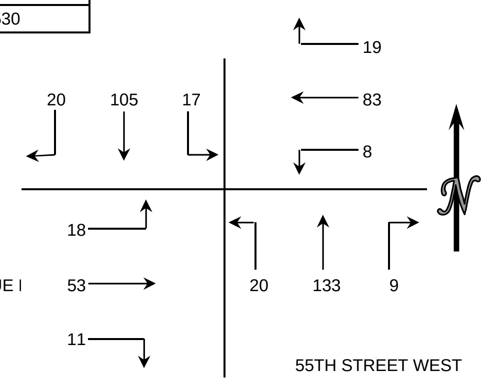
15 MIN COUNTS — **0**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	2	17	2	8	23	3	3	25	0	1	17	3	104
415-430	3	14	6	3	17	1	2	21	2	1	21	7	98
430-445	6	26	3	5	23	4	2	28	2	4	14	3	120
445-500	7	23	5	3	19	3	4	32	5	1	15	6	123
500-515	3	26	5	4	18	1	2	33	8	2	10	7	119
515-530	4	30	4	7	23	0	1	40	5	4	14	2	134
530-545	3	23	5	4	22	0	2	27	6	5	15	2	114
545-600	6	18	1	12	23	0	2	33	12	4	14	3	128

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	18	80	16	19	82	11	11	106	9	7	67	19	445
415-515	19	89	19	15	77	9	10	114	17	8	60	23	460
430-530	20	105	17	19	83	8	9	133	20	11	53	18	496
445-545	17	102	19	18	82	4	9	132	24	12	54	17	490
500-600	16	97	15	27	86	1	7	133	31	15	53	14	495

PEAK HOUR
430-530



WILTEC

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

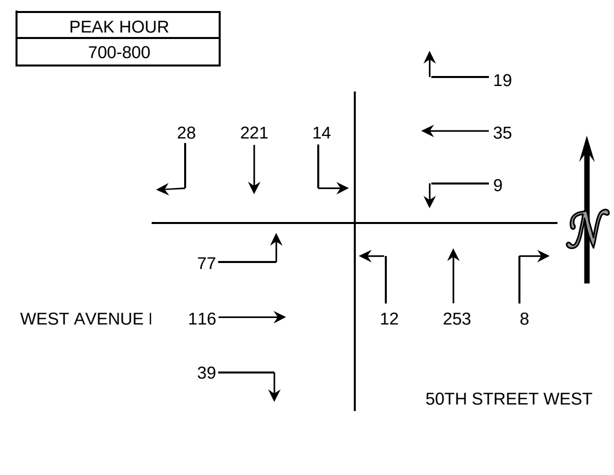
CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	50TH STREET WEST
	E/W	WEST AVENUE M-8
CITY:		QUARTZ HILL

15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	4	50	0	6	7	2	1	46	1	11	28	12	168
715-730	8	74	2	3	9	3	5	58	1	10	28	20	221
730-745	10	51	7	6	7	0	1	70	7	10	34	33	236
745-800	6	46	5	4	12	4	1	79	3	8	26	12	206
800-815	6	47	4	4	5	2	3	49	6	8	14	6	154
815-830	4	46	2	4	11	1	1	66	6	0	10	8	159
830-845	6	46	1	1	8	0	1	40	11	2	11	11	138
845-900	4	43	2	4	6	3	3	42	5	3	9	13	137

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	28	221	14	19	35	9	8	253	12	39	116	77	831
715-815	30	218	18	17	33	9	10	256	17	36	102	71	817
730-830	26	190	18	18	35	7	6	264	22	26	84	59	755
745-845	22	185	12	13	36	7	6	234	26	18	61	37	657
800-900	20	182	9	13	30	6	8	197	28	13	44	38	588

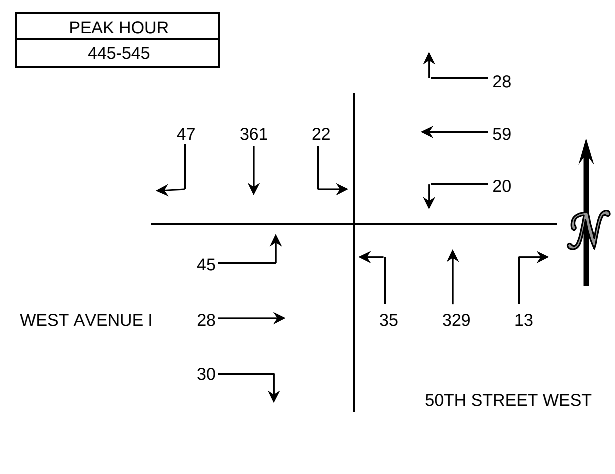


15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	12	98	4	6	8	4	4	95	7	7	11	14	270
415-430	13	85	4	2	13	1	2	70	6	8	7	8	219
430-445	11	77	8	4	16	0	2	88	11	1	10	6	234
445-500	8	96	9	10	18	2	3	94	10	6	5	10	271
500-515	13	104	5	6	16	6	2	79	14	8	12	12	277
515-530	10	88	3	4	10	3	2	81	4	9	5	10	229
530-545	16	73	5	8	15	9	6	75	7	7	6	13	240
545-600	9	82	5	6	12	3	2	96	8	7	8	13	251

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	44	356	25	22	55	7	11	347	34	22	33	38	994
415-515	45	362	26	22	63	9	9	331	41	23	34	36	1001
430-530	42	365	25	24	60	11	9	342	39	24	32	38	1011
445-545	47	361	22	28	59	20	13	329	35	30	28	45	1017
500-600	48	347	18	24	53	21	12	331	33	31	31	48	997



WILTEC

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	60TH STREET WEST
	E/W	WEST AVENUE N
CITY:		QUARTZ HILL

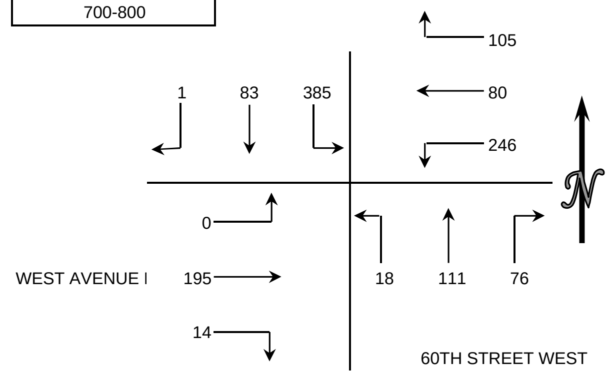
15 MIN COUNTS — **7:00 AM TO 9:00 AM**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	14	86	27	21	71	17	25	6	4	43	0	314
715-730	0	22	124	32	17	67	20	29	5	3	70	0	389
730-745	1	30	94	30	28	59	17	36	4	5	55	0	359
745-800	0	17	81	16	14	49	22	21	3	2	27	0	252
800-815	0	17	43	11	13	28	11	18	0	4	18	1	164
815-830	0	11	40	21	14	15	8	5	0	1	21	0	136
830-845	0	10	57	9	5	28	2	13	0	2	16	0	142
845-900	0	8	28	6	10	26	17	9	0	0	13	1	118

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	1	83	385	105	80	246	76	111	18	14	195	0	1314
715-815	1	86	342	89	72	203	70	104	12	14	170	1	1164
730-830	1	75	258	78	69	151	58	80	7	12	121	1	911
745-845	0	55	221	57	46	120	43	57	3	9	82	1	694
800-900	0	46	168	47	42	97	38	45	0	7	68	2	560

PEAK HOUR
700-800



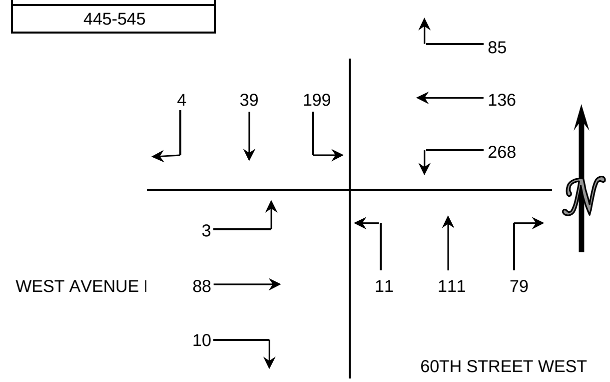
15 MIN COUNTS — **0**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	13	45	26	23	52	20	21	4	0	27	3	234
415-430	1	15	31	25	36	57	21	22	6	0	33	0	247
430-445	1	9	37	25	29	55	18	21	0	0	35	1	231
445-500	0	11	46	19	29	69	17	29	4	4	25	1	254
500-515	3	11	54	23	39	71	16	40	3	4	27	1	292
515-530	1	9	43	23	33	66	27	26	3	0	15	1	247
530-545	0	8	56	20	35	62	19	16	1	2	21	0	240
545-600	0	17	55	14	34	68	24	17	4	2	16	0	251

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	2	48	159	95	117	233	76	93	14	4	120	5	966
415-515	5	46	168	92	133	252	72	112	13	8	120	3	1024
430-530	5	40	180	90	130	261	78	116	10	8	102	4	1024
445-545	4	39	199	85	136	268	79	111	11	10	88	3	1033
500-600	4	45	208	80	141	267	86	99	11	8	79	2	1030

PEAK HOUR
445-545



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	55TH STREET WEST
	E/W	WEST AVENUE N
CITY:		QUARTZ HILL

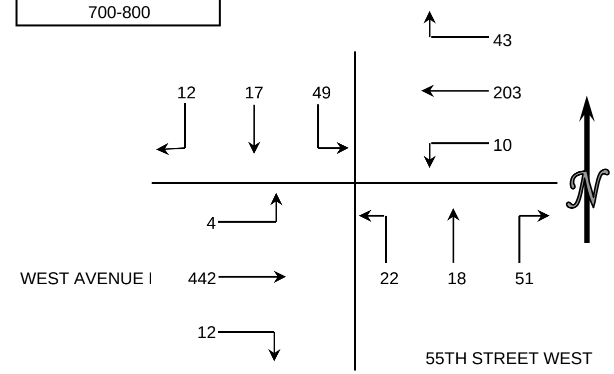
15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	4	5	10	9	57	3	18	8	2	5	122	2	245
715-730	3	8	9	10	56	3	9	3	1	1	128	1	232
730-745	0	2	10	9	47	2	11	1	3	2	101	0	188
745-800	5	2	20	15	43	2	13	6	16	4	91	1	218
800-815	5	9	14	15	43	7	17	7	6	10	89	2	224
815-830	2	7	10	11	53	3	14	5	2	3	77	0	187
830-845	1	1	10	7	40	3	10	2	3	1	54	1	133
845-900	4	5	13	13	51	0	15	3	7	3	60	1	175

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	12	17	49	43	203	10	51	18	22	12	442	4	883
715-815	13	21	53	49	189	14	50	17	26	17	409	4	862
730-830	12	20	54	50	186	14	55	19	27	19	358	3	817
745-845	13	19	54	48	179	15	54	20	27	18	311	4	762
800-900	12	22	47	46	187	13	56	17	18	17	280	4	719

PEAK HOUR
700-800



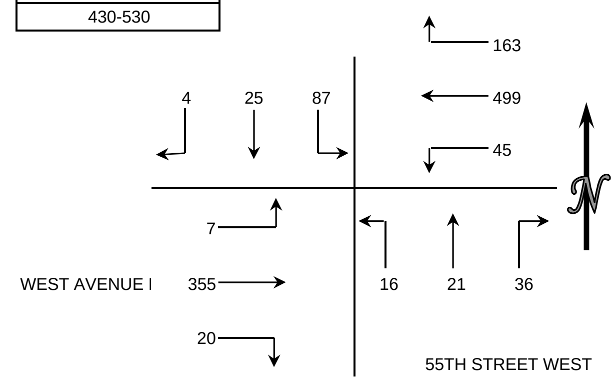
15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	9	2	19	27	123	11	7	8	8	5	85	2	306
415-430	2	1	23	29	120	14	12	9	6	5	89	6	316
430-445	0	6	23	35	121	11	11	9	5	5	95	2	323
445-500	0	4	15	42	115	11	5	7	5	5	96	1	306
500-515	1	8	29	47	126	11	12	4	3	3	73	1	318
515-530	3	7	20	39	137	12	8	1	3	7	91	3	331
530-545	1	7	27	28	130	9	8	3	4	5	84	0	306
545-600	3	2	23	34	120	7	14	3	5	5	99	3	318

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	11	13	80	133	479	47	35	33	24	20	365	11	1251
415-515	3	19	90	153	482	47	40	29	19	18	353	10	1263
430-530	4	25	87	163	499	45	36	21	16	20	355	7	1278
445-545	5	26	91	156	508	43	33	15	15	20	344	5	1261
500-600	8	24	99	148	513	39	42	11	15	20	347	7	1273

PEAK HOUR
430-530



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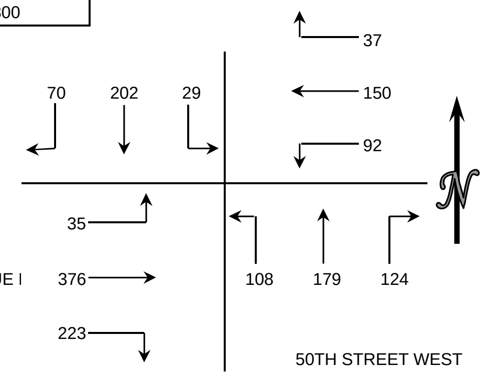
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		THURSDAY MAY 29, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	50TH STREET WEST
	E/W	WEST AVENUE N
CITY:		QUARTZ HILL

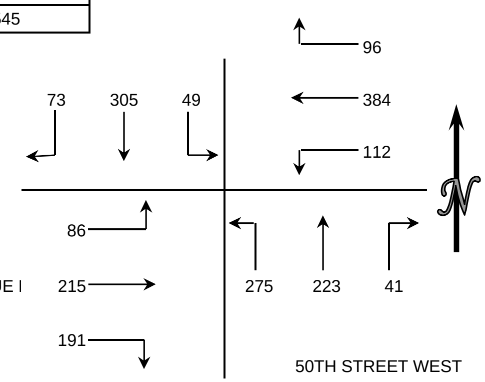
15 MIN COUNTS						7:00 AM TO 9:00 AM							
	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-715	12	52	4	3	34	17	13	30	28	51	87	4	335
715-730	29	64	15	12	35	35	43	41	29	48	98	10	459
730-745	19	55	6	9	55	20	44	61	28	81	119	12	509
745-800	10	31	4	13	26	20	24	47	23	43	72	9	322
800-815	20	39	5	9	46	9	22	24	14	35	70	14	307
815-830	14	33	5	8	34	5	19	43	27	43	51	10	292
830-845	14	42	3	7	34	6	16	31	28	34	66	11	292
845-900	12	37	5	9	56	11	21	32	34	49	75	11	352
HOUR TOTALS													
	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
700-800	70	202	29	37	150	92	124	179	108	223	376	35	1625
715-815	78	189	30	43	162	84	133	173	94	207	359	45	1597
730-830	63	158	20	39	161	54	109	175	92	202	312	45	1430
745-845	58	145	17	37	140	40	81	145	92	155	259	44	1213
800-900	60	151	18	33	170	31	78	130	103	161	262	46	1243

PEAK HOUR
700-800



15 MIN COUNTS						0							
	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	19	70	12	17	93	20	9	74	44	41	54	23	476
415-430	17	62	13	21	78	25	13	30	44	42	42	26	413
430-445	11	57	12	22	92	29	11	52	48	62	44	27	467
445-500	13	78	7	21	88	20	10	58	62	33	55	19	464
500-515	18	82	17	17	90	27	13	68	71	58	55	19	535
515-530	21	73	15	19	112	21	8	45	68	49	51	23	505
530-545	21	72	10	39	94	44	10	52	74	51	54	25	546
545-600	20	54	8	12	77	26	13	53	51	54	53	15	436
HOUR TOTALS													
	1	2	3	4	5	6	7	8	9	10	11	12	
TIME	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	60	267	44	81	351	94	43	214	198	178	195	95	1820
415-515	59	279	49	81	348	101	47	208	225	195	196	91	1879
430-530	63	290	51	79	382	97	42	223	249	202	205	88	1971
445-545	73	305	49	96	384	112	41	223	275	191	215	86	2050
500-600	80	281	50	87	373	118	44	218	264	212	213	82	2022

PEAK HOUR
445-545



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		WEDNESDAY MAY 28, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	45TH STREET WEST
	E/W	WEST AVENUE N
CITY:		QUARTZ HILL

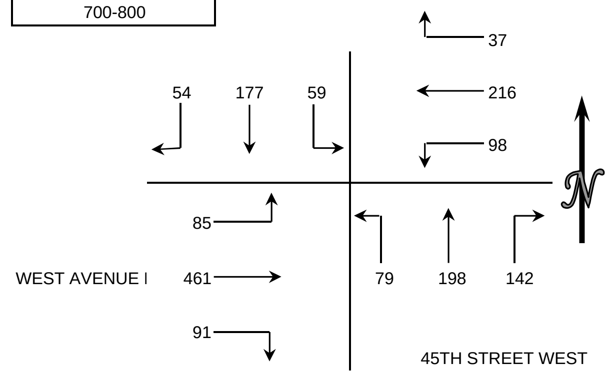
15 MIN COUNTS 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	4	22	11	8	42	13	26	41	22	15	94	6	304
715-730	17	55	13	12	67	24	34	44	15	27	119	16	443
730-745	11	71	20	12	57	43	53	53	20	37	134	33	544
745-800	22	29	15	5	50	18	29	60	22	12	114	30	406
800-815	7	19	11	5	34	7	22	17	11	11	95	11	250
815-830	2	11	11	4	42	7	19	17	4	9	90	2	218
830-845	4	6	8	7	39	10	16	14	1	5	74	0	184
845-900	4	7	12	4	45	8	19	16	5	7	81	4	212

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	54	177	59	37	216	98	142	198	79	91	461	85	1697
715-815	57	174	59	34	208	92	138	174	68	87	462	90	1643
730-830	42	130	57	26	183	75	123	147	57	69	433	76	1418
745-845	35	65	45	21	165	42	86	108	38	37	373	43	1058
800-900	17	43	42	20	160	32	76	64	21	32	340	17	864

PEAK HOUR
700-800



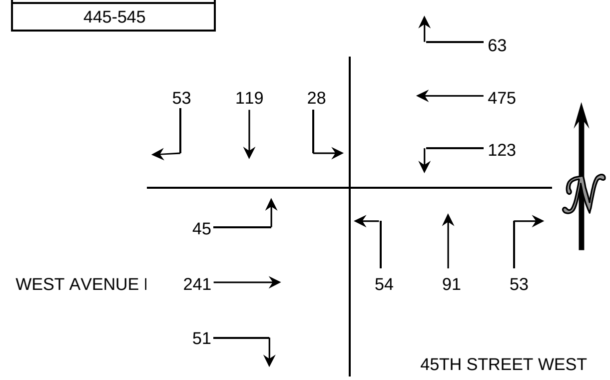
15 MIN COUNTS 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	12	21	6	18	96	19	10	21	10	11	45	6	275
415-430	9	23	8	11	119	14	5	18	8	14	80	4	313
430-445	6	24	9	10	103	18	14	24	12	11	61	8	300
445-500	13	36	6	17	117	28	13	22	12	16	56	6	342
500-515	10	29	7	10	106	24	15	28	16	13	63	15	336
515-530	13	27	6	19	138	39	13	23	8	10	64	10	370
530-545	17	27	9	17	114	32	12	18	18	12	58	14	348
545-600	15	24	4	8	111	22	11	19	9	9	55	10	297

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	40	104	29	56	435	79	42	85	42	52	242	24	1230
415-515	38	112	30	48	445	84	47	92	48	54	260	33	1291
430-530	42	116	28	56	464	109	55	97	48	50	244	39	1348
445-545	53	119	28	63	475	123	53	91	54	51	241	45	1396
500-600	55	107	26	54	469	117	51	88	51	44	240	49	1351

PEAK HOUR
445-545



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		WEDNESDAY MAY 28, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	30TH STREET WEST
	E/W	WEST AVENUE L
CITY:		QUARTZ HILL

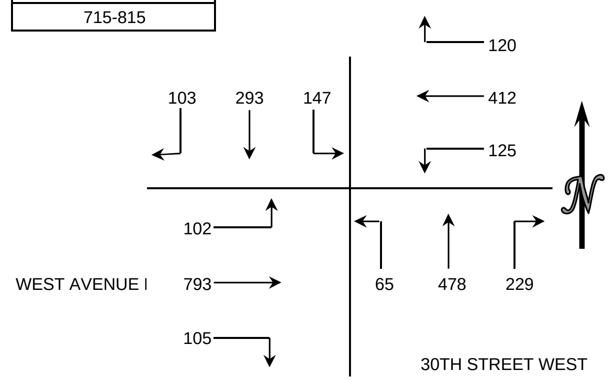
15 MIN COUNTS — 7:00 AM TO 9:00 AM

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	20	76	37	7	115	15	26	59	13	18	142	15	543
715-730	31	70	29	17	122	30	56	112	15	32	194	17	725
730-745	29	88	42	35	117	46	69	144	16	31	204	35	856
745-800	20	79	42	40	103	35	71	127	23	20	219	25	804
800-815	23	56	34	28	70	14	33	95	11	22	176	25	587
815-830	23	70	31	19	83	12	34	82	19	9	150	21	553
830-845	23	69	23	10	87	14	21	58	9	9	131	15	469
845-900	17	42	25	17	80	21	36	63	16	15	144	16	492

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	100	313	150	99	457	126	222	442	67	101	759	92	2928
715-815	103	293	147	120	412	125	229	478	65	105	793	102	2972
730-830	95	293	149	122	373	107	207	448	69	82	749	106	2800
745-845	89	274	130	97	343	75	159	362	62	60	676	86	2413
800-900	86	237	113	74	320	61	124	298	55	55	601	77	2101

PEAK HOUR
715-815



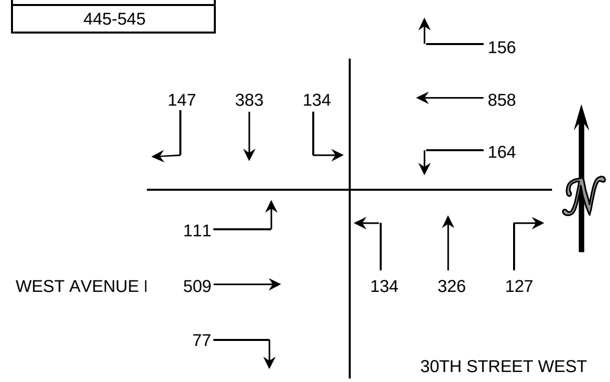
15 MIN COUNTS — 0

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	43	90	31	31	204	34	32	83	26	18	157	26	775
415-430	32	83	37	26	176	43	26	100	23	16	145	31	738
430-445	43	95	37	27	186	43	30	72	28	21	143	31	756
445-500	45	93	38	45	200	40	35	83	29	16	139	25	788
500-515	42	108	41	33	210	44	27	78	43	20	131	26	803
515-530	30	103	34	44	224	40	34	66	31	23	116	30	775
530-545	30	79	21	34	224	40	31	99	31	18	123	30	760
545-600	38	81	27	34	202	38	30	112	24	18	129	22	755

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	163	361	143	129	766	160	123	338	106	71	584	113	3057
415-515	162	379	153	131	772	170	118	333	123	73	558	113	3085
430-530	160	399	150	149	820	167	126	299	131	80	529	112	3122
445-545	147	383	134	156	858	164	127	326	134	77	509	111	3126
500-600	140	371	123	145	860	162	122	355	129	79	499	108	3093

PEAK HOUR
445-545



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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT:		INTUEOR CONSULTING, INC.
PROJECT:		QUARTZ HILL TRAFFIC COUNTS
DATE:		WEDNESDAY MAY 28, 2014
PERIOD:		7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
INTERSECTION:	N/S	30TH STREET WEST
	E/W	WEST AVENUE L
CITY:		QUARTZ HILL

UTURNS

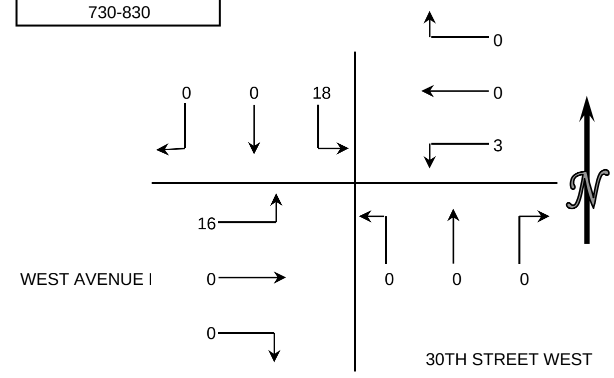
15 MIN COUNTS — **7:00 AM TO 9:00 AM**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-715	0	0	3	0	0	0	0	0	0	0	0	3	6
715-730	0	0	2	0	0	0	0	0	0	0	0	4	6
730-745	0	0	5	0	0	0	0	0	0	0	0	6	11
745-800	0	0	4	0	0	2	0	0	0	0	0	3	9
800-815	0	0	3	0	0	0	0	0	0	0	0	7	10
815-830	0	0	6	0	0	1	0	0	0	0	0	0	7
830-845	0	0	4	0	0	1	0	0	0	0	0	3	8
845-900	0	0	0	0	0	0	0	0	2	0	0	4	6

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
700-800	0	0	14	0	0	2	0	0	0	0	0	16	32
715-815	0	0	14	0	0	2	0	0	0	0	0	20	36
730-830	0	0	18	0	0	3	0	0	0	0	0	16	37
745-845	0	0	17	0	0	4	0	0	0	0	0	13	34
800-900	0	0	13	0	0	2	0	0	2	0	0	14	31

PEAK HOUR
730-830



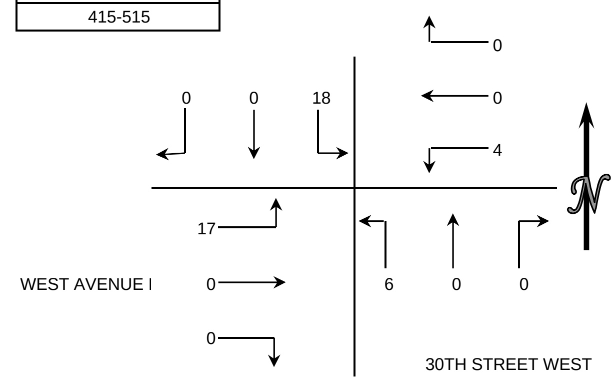
15 MIN COUNTS — **0**

PERIOD	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-415	0	0	2	0	0	3	0	0	0	0	0	4	9
415-430	0	0	4	0	0	0	0	0	1	0	0	6	11
430-445	0	0	2	0	0	0	0	0	1	0	0	6	9
445-500	0	0	6	0	0	3	0	0	3	0	0	3	15
500-515	0	0	6	0	0	1	0	0	1	0	0	2	10
515-530	0	0	2	0	0	0	0	0	0	0	0	1	3
530-545	0	0	4	0	0	0	0	0	5	0	0	3	12
545-600	0	0	4	0	0	0	0	0	0	0	0	2	6

HOUR TOTALS

TIME	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTAL
400-500	0	0	14	0	0	6	0	0	5	0	0	19	44
415-515	0	0	18	0	0	4	0	0	6	0	0	17	45
430-530	0	0	16	0	0	4	0	0	5	0	0	12	37
445-545	0	0	18	0	0	4	0	0	9	0	0	9	40
500-600	0	0	16	0	0	1	0	0	6	0	0	8	31

PEAK HOUR
415-515



Appendix B
Existing Without Project ICU Output

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 1
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	91			49		
NBT	0.33	528	80	233	0.15	81	158	0.10
NBR	0.33	528	53			23		
SBL	0.5	800	16			11		
SBT	0.5	800	100	198	0.12	81	114	0.07
SBR	1	1600	80		0.05	21		0.01
EBL	1	1600	72		0.05	12		0.01
EBT	0.5	800	312	423	0.26	77	108	0.07
EBR	0.5	800	111			31		
WBL	0.33	528	20			28		
WBT	0.33	528	263	321	0.20	96	142	0.09
WBR	0.33	528	18			15		
		N/S Movements			0.15			0.10
		E/W Movements			0.26			0.10
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.510**			**0.296**
LEVEL OF SERVICE (LOS)					**A**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: **2**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	81		0.05	74		0.05
NBT	1	1600	304		0.19	302		0.19
NBR	1	1600	77		0.05	56		0.04
SBL	1	1600	16		0.01	15		0.01
SBT	1	1600	251		0.16	352		0.22
SBR	1	1600	39		0.02	36		0.02
EBL	1	1600	41		0.03	17		0.01
EBT	0.5	800	186	256	0.16	57	105	0.07
EBR	0.5	800	70			48		
WBL	1	1600	61		0.04	67		0.04
WBT	0.5	800	114	125	0.08	67	81	0.05
WBR	0.5	800	11			14		
		N/S Movements			0.21			0.27
		E/W Movements			0.20			0.11
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.506**			**0.474**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 3
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	27			49		
NBT	0.33	528	344	428	0.27	228	355	0.22
NBR	0.33	528	30			29		
SBL	1	1600	133		0.08	47		0.03
SBT	0.5	800	372	385	0.24	247	280	0.18
SBR	0.5	800	13			33		
EBL	0.33	528	34			22		
EBT	0.33	528	182	300	0.19	116	192	0.12
EBR	0.33	528	50			32		
WBL	1	1600	33		0.02	19		0.01
WBT	1	1600	65		0.04	144		0.09
WBR	1	1600	189		0.12	71		0.04
		N/S Movements			0.35			0.25
		E/W Movements			0.21			0.13
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.660**			**0.483**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: **4**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	22		0.01
NBT	0.5	800	238	280	0.18	113	134	0.08
NBR	0.5	800	42			21		
SBL	1	1600	102		0.06	16		0.01
SBT	1	1600	186		0.12	104		0.07
SBR	1	1600	16		0.01	19		0.01
EBL	1	1600	35		0.02	19		0.01
EBT	0.5	800	302	353	0.22	196	211	0.13
EBR	0.5	800	51			15		
WBL	1	1600	33		0.02	42		0.03
WBT	1	1600	200		0.13	235		0.15
WBR	1	1600	70		0.04	43		0.03
		N/S Movements			0.24			0.09
		E/W Movements			0.24			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.580**			**0.352**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 5
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	109		0.07	82		0.05
NBT	1	1600	388		0.24	277		0.17
NBR	1	1600	95		0.06	44		0.03
SBL	1	1600	73		0.05	56		0.04
SBT	1	1600	297		0.19	343		0.21
SBR	1	1600	44		0.03	80		0.05
EBL	1	1600	53		0.03	62		0.04
EBT	1	1600	256		0.16	118		0.07
EBR	1	1600	139		0.09	84		0.05
WBL	1	1600	44		0.03	62		0.04
WBT	1	1600	130		0.08	178		0.11
WBR	1	1600	54		0.03	99		0.06
		N/S Movements			0.29			0.27
		E/W Movements			0.19			0.15
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.576**			**0.516**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 6
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	33		0.02	29		0.02
NBT	0.5	800	404	461	0.29	325	362	0.23
NBR	0.5	800	57			37		
SBL	1	1600	193		0.12	90		0.06
SBT	1.5	2400	268	178	0.11	389	225	0.14
SBR	0.5	800	88			61		
EBL	1	1600	159		0.10	50		0.03
EBT	1	1600	472		0.30	244		0.15
EBR	1	1600	7		0.00	22		0.01
WBL	1	1600	22		0.01	96		0.06
WBT	1	1600	213		0.13	401		0.25
WBR	1	1600	113		0.07	93		0.06
		N/S Movements			0.41			0.28
		E/W Movements			0.31			0.28
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.817**			**0.664**
LEVEL OF SERVICE (LOS)					**D**			**B**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 7
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	3		0.00	8		0.01
NBT	1	1600	356		0.22	380		0.24
NBR	1	1600	47		0.03	21		0.01
SBL	1	1600	105		0.07	53		0.03
SBT	1	1600	245		0.15	438		0.27
SBR	1	1600	46		0.03	19		0.01
EBL	0.33	528	44			3		
EBT	0.33	528	69	127	0.08	6	24	0.02
EBR	0.33	528	10			15		
WBL	0.33	528	53			12		
WBT	0.33	528	37	238	0.15	5	43	0.03
WBR	0.33	528	143			25		
		N/S Movements			0.29			0.28
		E/W Movements			0.149			0.03
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.537**			**0.406**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 8
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	71		0.04	74		0.05
NBT	1.5	2400	274	140	0.09	301	156	0.10
NBR	0.5	800	6			11		
SBL	1	1600	60		0.04	24		0.02
SBT	0.5	800	361	374	0.23	222	246	0.15
SBR	0.5	800	13			24		
EBL	0.33	528	10			14		
EBT	0.33	528	77	185	0.12	20	72	0.05
EBR	0.33	528	97			37		
WBL	0.5	800	4			0		
WBT	0.5	800	47	51	0.03	31	31	0.02
WBR	1	1600	62		0.04	23		0.01
		N/S Movements			0.28			0.20
		E/W Movements			0.12			0.05
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.494**			**0.345**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 9
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	36		0.02	20		0.01
NBT	1	1600	209		0.13	133		0.08
NBR	1	1600	33		0.02	9		0.01
SBL	1	1600	54		0.03	17		0.01
SBT	0.5	800	175	197	0.12	105	125	0.08
SBR	0.5	800	22			20		
EBL	1	1600	34		0.02	18		0.01
EBT	0.5	800	148	184	0.12	53	64	0.04
EBR	0.5	800	36			11		
WBL	1	1600	11		0.01	8		0.01
WBT	0.5	800	77	134	0.08	83	102	0.06
WBR	0.5	800	57			19		
		N/S Movements			0.16			0.09
		E/W Movements			0.12			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.386**			**0.269**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: **10**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	12		0.01	35		0.02
NBT	0.5	800	253	261	0.16	329	342	0.21
NBR	0.5	800	8			13		
SBL	1	1600	14		0.01	22		0.01
SBT	0.5	800	221	249	0.16	361	408	0.26
SBR	0.5	800	28			47		
EBL	1	1600	77		0.05	45		0.03
EBT	1	1600	116		0.07	28		0.02
EBR	1	1600	39			30		
WBL	1	1600	9		0.01	20		0.01
WBT	0.5	800	35	54	0.03	59	87	0.05
WBR	0.5	800	19			28		
		N/S Movements			0.17			0.28
		E/W Movements			0.08			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.354**			**0.459**
LEVEL OF SERVICE (LOS)					**A**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 11
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	18		0.01	11		0.01
NBT	1	1600	111		0.07	111		0.07
NBR	1	1600	76		0.05	79		0.05
SBL	1	1600	385		0.24	199		0.12
SBT	0.5	800	83	84	0.05	39	43	0.03
SBR	0.5	800	1			4		
EBL	0.33	528	0			3		
EBT	0.33	528	195	209	0.13	88	104	0.07
EBR	0.33	528	14			10		
WBL	0.5	800	246			268		
WBT	0.5	800	80	572	0.36	136	431	0.27
WBR	1	1600	105			85		
		N/S Movements			0.31			0.19
		E/W Movements			0.36			0.27
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.768**			**0.563**
LEVEL OF SERVICE (LOS)					**C**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 12
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	22		0.01	16		0.01
NBT	0.5	800	18	69	0.04	21	57	0.04
NBR	0.5	800	51			36		
SBL	1	1600	49		0.03	87		0.05
SBT	1	1600	17		0.01	25		0.02
SBR	1	1600	12		0.01	4		0.00
EBL	1	1600	4		0.00	7		0.00
EBT	1.5	2400	442	227	0.14	355	188	0.12
EBR	0.5	800	12			20		
WBL	1	1600	10		0.01	45		0.03
WBT	2	3200	203		0.06	499		0.16
WBR	1	1600	43		0.03	163		0.10
		N/S Movements			0.07			0.09
		E/W Movements			0.15			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.322**			**0.351**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: 13
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	108		0.07	275		0.17
NBT	1	1600	179		0.11	223		0.14
NBR	1	1600	124		0.08	41		0.03
SBL	1	1600	29		0.02	49		0.03
SBT	2	3200	202		0.06	305		0.10
SBR	1	1600	70		0.04	73		0.05
EBL	1	1600	35		0.02	86		0.05
EBT	2	3200	376		0.12	215		0.07
EBR	1	1600	223		0.14	191		0.12
WBL	1	1600	92		0.06	112		0.07
WBT	1.5	2400	150	94	0.06	384	240	0.15
WBR	0.5	800	37			96		
		N/S Movements			0.13			0.27
		E/W Movements			0.18			0.20
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.405**			**0.571**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: **14**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	79		0.05	54		0.03
NBT	1	1600	198		0.12	91		0.06
NBR	1	1600	142		0.09	53		0.03
SBL	1	1600	59		0.04	28		0.02
SBT	1	1600	177		0.11	119		0.07
SBR	1	1600	54		0.03	53		0.03
EBL	1	1600	85		0.05	45		0.03
EBT	1	1600	461		0.29	241		0.15
EBR	1	1600	91		0.06	51		0.03
WBL	1	1600	98		0.06	123		0.08
WBT	1	1600	216		0.14	475		0.30
WBR	1	1600	37		0.02	63		0.04
		N/S Movements			0.16			0.11
		E/W Movements			0.35			0.33
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.610**			**0.533**
LEVEL OF SERVICE (LOS)					**B**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions Without Project
INTERSECTION: **15**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	143		0.09
NBT	0.5	800	478	707	0.44	326	453	0.28
NBR	0.5	800	229			127		
SBL	1	1600	161		0.10	152		0.10
SBT	0.5	800	293	396	0.25	383	530	0.33
SBR	0.5	800	103			147		
EBL	1	1600	122		0.08	120		0.08
EBT	0.5	800	793	898	0.56	509	586	0.37
EBR	0.5	800	105			77		
WBL	1	1600	127		0.08	168		0.11
WBT	0.5	800	412	532	0.33	858	1014	0.63
WBR	0.5	800	120			156		
		N/S Movements			0.54			0.42
		E/W Movements			0.64			0.71
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**1.283**			**1.229**
LEVEL OF SERVICE (LOS)					**F**			**F**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

Appendix C
Existing With Project ICU Output

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 1
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	91			49		
NBT	0.33	528	80	233	0.15	86	163	0.10
NBR	0.33	528	53			23		
SBL	0.5	800	16			11		
SBT	0.5	800	101	199	0.12	86	119	0.07
SBR	1	1600	80		0.05	21		0.01
EBL	1	1600	72		0.05	12		0.01
EBT	0.5	800	312	423	0.26	77	108	0.07
EBR	0.5	800	111			31		
WBL	0.33	528	20			28		
WBT	0.33	528	263	321	0.20	96	142	0.09
WBR	0.33	528	18			15		
		N/S Movements			0.15			0.10
		E/W Movements			0.26			0.10
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.510**			**0.299**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: **2**
Analysis Date: **9/25/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	81		0.05	74		0.05
NBT	1	1600	305		0.19	312		0.20
NBR	1	1600	77		0.05	56		0.04
SBL	1	1600	16		0.01	15		0.01
SBT	1	1600	253		0.16	361		0.23
SBR	1	1600	39		0.02	36		0.02
EBL	1	1600	41		0.03	17		0.01
EBT	0.5	800	186	256	0.16	57	105	0.07
EBR	0.5	800	70			48		
WBL	1	1600	61		0.04	67		0.04
WBT	0.5	800	114	125	0.08	67	81	0.05
WBR	0.5	800	11			14		
		N/S Movements			0.21			0.27
		E/W Movements			0.20			0.11
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.507**			**0.480**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 3
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	27			49		
NBT	0.33	528	344	428	0.27	228	355	0.22
NBR	0.33	528	30			29		
SBL	1	1600	133		0.08	47		0.03
SBT	0.5	800	372	385	0.24	247	280	0.18
SBR	0.5	800	13			33		
EBL	0.33	528	34			22		
EBT	0.33	528	183	301	0.19	120	196	0.12
EBR	0.33	528	50			32		
WBL	1	1600	33		0.02	19		0.01
WBT	1	1600	65		0.04	149		0.09
WBR	1	1600	189		0.12	71		0.04
		N/S Movements			0.35			0.25
		E/W Movements			0.21			0.13
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.660**			**0.486**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: **4**
Analysis Date: **9/25/2014**

MOVEMENT	LANES	CAPACITY	AM PEAK HOUR VOLUME	AM ADJ VOL	AM ADJ V/C	PM PEAK HOUR VOLUME	PM ADJ VOL	PM ADJ V/C
NBL	1	1600	65		0.04	22		0.01
NBT	0.5	800	238	280	0.18	113	134	0.08
NBR	0.5	800	42			21		
SBL	1	1600	103		0.06	20		0.01
SBT	1	1600	186		0.12	104		0.07
SBR	1	1600	16		0.01	19		0.01
EBL	1	1600	35		0.02	19		0.01
EBT	0.5	800	303	354	0.22	200	215	0.13
EBR	0.5	800	51			15		
WBL	1	1600	33		0.02	42		0.03
WBT	1	1600	200		0.13	240		0.15
WBR	1	1600	70		0.04	48		0.03
		N/S Movements			0.24			0.10
		E/W Movements			0.24			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.581**			**0.357**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 5
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	110		0.07	92		0.06
NBT	1	1600	389		0.24	287		0.18
NBR	1	1600	95		0.06	46		0.03
SBL	1	1600	73		0.05	56		0.04
SBT	1	1600	299		0.19	352		0.22
SBR	1	1600	44		0.03	80		0.05
EBL	1	1600	53		0.03	62		0.04
EBT	1	1600	256		0.16	118		0.07
EBR	1	1600	141		0.09	93		0.06
WBL	1	1600	44		0.03	64		0.04
WBT	1	1600	130		0.08	178		0.11
WBR	1	1600	54		0.03	99		0.06
		N/S Movements			0.29			0.28
		E/W Movements			0.19			0.15
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.576**			**0.528**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 6
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	33		0.02	29		0.02
NBT	0.5	800	404	461	0.29	325	362	0.23
NBR	0.5	800	57			37		
SBL	1	1600	193		0.12	90		0.06
SBT	1.5	2400	268	178	0.11	389	225	0.14
SBR	0.5	800	88			61		
EBL	1	1600	159		0.10	50		0.03
EBT	1	1600	472		0.30	246		0.15
EBR	1	1600	7		0.00	22		0.01
WBL	1	1600	22		0.01	96		0.06
WBT	1	1600	213		0.13	403		0.25
WBR	1	1600	113		0.07	93		0.06
		N/S Movements			0.41			0.28
		E/W Movements			0.31			0.28
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.817**			**0.665**
LEVEL OF SERVICE (LOS)					**D**			**B**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 7
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	3		0.00	8		0.01
NBT	1	1600	362		0.23	404		0.25
NBR	1	1600	47		0.03	21		0.01
SBL	1	1600	105		0.07	53		0.03
SBT	1	1600	247		0.15	464		0.29
SBR	1	1600	46		0.03	19		0.01
EBL	0.33	528	44			3		
EBT	0.33	528	69	127	0.08	6	24	0.02
EBR	0.33	528	10			15		
WBL	0.33	528	53			12		
WBT	0.33	528	37	238	0.15	5	43	0.03
WBR	0.33	528	143			25		
		N/S Movements			0.29			0.30
		E/W Movements			0.149			0.03
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.541**			**0.422**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 8
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	71		0.04	74		0.05
NBT	1.5	2400	274	140	0.09	301	156	0.10
NBR	0.5	800	6			11		
SBL	1	1600	60		0.04	24		0.02
SBT	0.5	800	361	374	0.23	222	246	0.15
SBR	0.5	800	13			24		
EBL	0.33	528	10			14		
EBT	0.33	528	78	186	0.12	24	76	0.05
EBR	0.33	528	97			37		
WBL	0.5	800	4			0		
WBT	0.5	800	47	51	0.03	36	36	0.02
WBR	1	1600	62		0.04	23		0.01
		N/S Movements			0.28			0.20
		E/W Movements			0.12			0.05
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.494**			**0.348**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 9
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	36		0.02	20		0.01
NBT	1	1600	209		0.13	133		0.08
NBR	1	1600	33		0.02	9		0.01
SBL	1	1600	54		0.03	17		0.01
SBT	0.5	800	175	197	0.12	105	125	0.08
SBR	0.5	800	22			20		
EBL	1	1600	34		0.02	18		0.01
EBT	0.5	800	149	185	0.12	57	68	0.04
EBR	0.5	800	36			11		
WBL	1	1600	11		0.01	8		0.01
WBT	0.5	800	77	134	0.08	88	107	0.07
WBR	0.5	800	57			19		
		N/S Movements			0.16			0.09
		E/W Movements			0.12			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.387**			**0.272**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: **10**
Analysis Date: **9/25/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	12		0.01	35		0.02
NBT	0.5	800	258	266	0.17	349	362	0.23
NBR	0.5	800	8			13		
SBL	1	1600	14		0.01	22		0.01
SBT	0.5	800	223	251	0.16	382	434	0.27
SBR	0.5	800	28			52		
EBL	1	1600	78		0.05	49		0.03
EBT	1	1600	116		0.07	28		0.02
EBR	1	1600	39			30		
WBL	1	1600	9		0.01	20		0.01
WBT	0.5	800	35	54	0.03	59	87	0.05
WBR	0.5	800	19			28		
		N/S Movements			0.17			0.29
		E/W Movements			0.08			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.358**			**0.478**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: **11**
Analysis Date: **9/25/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	18		0.01	11		0.01
NBT	1	1600	111		0.07	111		0.07
NBR	1	1600	76		0.05	79		0.05
SBL	1	1600	385		0.24	199		0.12
SBT	0.5	800	83	84	0.05	39	43	0.03
SBR	0.5	800	1			4		
EBL	0.33	528	0			3		
EBT	0.33	528	196	210	0.13	92	108	0.07
EBR	0.33	528	14			10		
WBL	0.5	800	246			268		
WBT	0.5	800	80	572	0.36	141	436	0.27
WBR	1	1600	105			85		
		N/S Movements			0.31			0.19
		E/W Movements			0.36			0.27
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.768**			**0.566**
LEVEL OF SERVICE (LOS)					**C**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 12
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	22		0.01	16		0.01
NBT	0.5	800	18	70	0.04	21	59	0.04
NBR	0.5	800	52			38		
SBL	1	1600	49		0.03	87		0.05
SBT	1	1600	17		0.01	25		0.02
SBR	1	1600	12		0.01	4		0.00
EBL	1	1600	4		0.00	7		0.00
EBT	1.5	2400	443	228	0.14	359	190	0.12
EBR	0.5	800	12			20		
WBL	1	1600	10		0.01	47		0.03
WBT	2	3200	203		0.06	504		0.16
WBR	1	1600	43		0.03	163		0.10
		N/S Movements			0.07			0.09
		E/W Movements			0.15			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.323**			**0.353**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 13
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	108		0.07	275		0.17
NBT	1	1600	180		0.11	230		0.14
NBR	1	1600	124		0.08	41		0.03
SBL	1	1600	30		0.02	56		0.04
SBT	2	3200	203		0.06	312		0.10
SBR	1	1600	71		0.04	80		0.05
EBL	1	1600	37		0.02	92		0.06
EBT	2	3200	376		0.12	215		0.07
EBR	1	1600	223		0.14	191		0.12
WBL	1	1600	92		0.06	112		0.07
WBT	1.5	2400	150	95	0.06	384	244	0.15
WBR	0.5	800	39			103		
		N/S Movements			0.13			0.27
		E/W Movements			0.18			0.21
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.406**			**0.579**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 14
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	80		0.05	59		0.04
NBT	1	1600	198		0.12	91		0.06
NBR	1	1600	142		0.09	53		0.03
SBL	1	1600	59		0.04	28		0.02
SBT	1	1600	177		0.11	119		0.07
SBR	1	1600	54		0.03	53		0.03
EBL	1	1600	85		0.05	45		0.03
EBT	1	1600	461		0.29	243		0.15
EBR	1	1600	91		0.06	56		0.04
WBL	1	1600	98		0.06	123		0.08
WBT	1	1600	217		0.14	477		0.30
WBR	1	1600	37		0.02	63		0.04
		N/S Movements			0.16			0.11
		E/W Movements			0.35			0.33
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.610**			**0.538**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Existing Conditions With Project
INTERSECTION: 15
Analysis Date: 9/25/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	143		0.09
NBT	0.5	800	478	707	0.44	326	453	0.28
NBR	0.5	800	229			127		
SBL	1	1600	161		0.10	152		0.10
SBT	0.5	800	293	396	0.25	383	530	0.33
SBR	0.5	800	103			147		
EBL	1	1600	122		0.08	120		0.08
EBT	0.5	800	793	898	0.56	511	588	0.37
EBR	0.5	800	105			77		
WBL	1	1600	127		0.08	168		0.11
WBT	0.5	800	413	533	0.33	860	1016	0.64
WBR	0.5	800	120			156		
		N/S Movements			0.54			0.42
		E/W Movements			0.64			0.71
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**1.283**			**1.230**
LEVEL OF SERVICE (LOS)					**F**			**F**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

Appendix D
Opening Year (2016) Without Project ICU Output

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 1
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	91			49		
NBT	0.33	528	80	233	0.15	81	158	0.10
NBR	0.33	528	53			23		
SBL	0.5	800	16			11		
SBT	0.5	800	100	198	0.12	81	114	0.07
SBR	1	1600	80		0.05	21		0.01
EBL	1	1600	72		0.05	12		0.01
EBT	0.5	800	312	423	0.26	77	108	0.07
EBR	0.5	800	111			31		
WBL	0.33	528	20			28		
WBT	0.33	528	263	321	0.20	96	142	0.09
WBR	0.33	528	18			15		
		N/S Movements			0.15			0.10
		E/W Movements			0.26			0.10
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.510**			**0.296**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 2
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	LANES	CAPACITY	VOLUME	ADJ VOL	ADJ V/C	VOLUME	ADJ VOL	ADJ V/C
NBL	1	1600	81		0.05	74		0.05
NBT	1	1600	341		0.21	322		0.20
NBR	1	1600	77		0.05	56		0.04
SBL	1	1600	16		0.01	15		0.01
SBT	1	1600	277		0.17	384		0.24
SBR	1	1600	39		0.02	36		0.02
EBL	1	1600	41		0.03	17		0.01
EBT	0.5	800	186	256	0.16	57	105	0.07
EBR	0.5	800	70			48		
WBL	1	1600	61		0.04	67		0.04
WBT	0.5	800	114	125	0.08	67	81	0.05
WBR	0.5	800	11			14		
		N/S Movements			0.22			0.29
		E/W Movements			0.20			0.11
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.522**			**0.494**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 3
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	27			49		
NBT	0.33	528	344	428	0.27	228	355	0.22
NBR	0.33	528	30			29		
SBL	1	1600	133		0.08	47		0.03
SBT	0.5	800	372	385	0.24	247	280	0.18
SBR	0.5	800	13			33		
EBL	0.33	528	34			22		
EBT	0.33	528	187	305	0.19	118	194	0.12
EBR	0.33	528	50			32		
WBL	1	1600	33		0.02	19		0.01
WBT	1	1600	67		0.04	147		0.09
WBR	1	1600	189		0.12	71		0.04
		N/S Movements			0.35			0.25
		E/W Movements			0.21			0.13
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.663**			**0.484**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 4
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	22		0.01
NBT	0.5	800	238	280	0.18	113	134	0.08
NBR	0.5	800	42			21		
SBL	1	1600	102		0.06	16		0.01
SBT	1	1600	186		0.12	104		0.07
SBR	1	1600	16		0.01	19		0.01
EBL	1	1600	35		0.02	19		0.01
EBT	0.5	800	307	358	0.22	198	213	0.13
EBR	0.5	800	51			15		
WBL	1	1600	33		0.02	42		0.03
WBT	1	1600	202		0.13	238		0.15
WBR	1	1600	70		0.04	43		0.03
		N/S Movements			0.24			0.09
		E/W Movements			0.24			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.583**			**0.353**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 5
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	109		0.07	82		0.05
NBT	1	1600	416		0.26	293		0.18
NBR	1	1600	95		0.06	44		0.03
SBL	1	1600	76		0.05	60		0.04
SBT	1	1600	318		0.20	368		0.23
SBR	1	1600	46		0.03	83		0.05
EBL	1	1600	58		0.04	64		0.04
EBT	1	1600	256		0.16	118		0.07
EBR	1	1600	139		0.09	84		0.05
WBL	1	1600	44		0.03	62		0.04
WBT	1	1600	130		0.08	178		0.11
WBR	1	1600	60		0.04	101		0.06
		N/S Movements			0.31			0.28
		E/W Movements			0.19			0.15
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.595**			**0.533**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 6
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	33		0.02	29		0.02
NBT	0.5	800	404	461	0.29	325	362	0.23
NBR	0.5	800	57			37		
SBL	1	1600	193		0.12	90		0.06
SBT	1.5	2400	268	178	0.11	389	225	0.14
SBR	0.5	800	88			61		
EBL	1	1600	159		0.10	50		0.03
EBT	1	1600	477		0.30	247		0.15
EBR	1	1600	7		0.00	22		0.01
WBL	1	1600	22		0.01	96		0.06
WBT	1	1600	218		0.14	406		0.25
WBR	1	1600	113		0.07	93		0.06
		N/S Movements			0.41			0.28
		E/W Movements			0.31			0.29
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.821**			**0.667**
LEVEL OF SERVICE (LOS)					**D**			**B**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 7
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	3		0.00	8		0.01
NBT	1	1600	383		0.24	396		0.25
NBR	1	1600	47		0.03	21		0.01
SBL	1	1600	105		0.07	53		0.03
SBT	1	1600	266		0.17	463		0.29
SBR	1	1600	46		0.03	19		0.01
EBL	0.33	528	44			3		
EBT	0.33	528	69	127	0.08	6	24	0.02
EBR	0.33	528	10			15		
WBL	0.33	528	53			12		
WBT	0.33	528	37	238	0.15	5	43	0.03
WBR	0.33	528	143			25		
		N/S Movements			0.31			0.29
		E/W Movements			0.149			0.03
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.554**			**0.421**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 8
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	71		0.04	74		0.05
NBT	1.5	2400	274	140	0.09	301	156	0.10
NBR	0.5	800	6			11		
SBL	1	1600	60		0.04	24		0.02
SBT	0.5	800	361	374	0.23	222	246	0.15
SBR	0.5	800	13			24		
EBL	0.33	528	10			14		
EBT	0.33	528	82	190	0.12	22	74	0.05
EBR	0.33	528	97			37		
WBL	0.5	800	4			0		
WBT	0.5	800	49	53	0.03	34	34	0.02
WBR	1	1600	62		0.04	23		0.01
		N/S Movements			0.28			0.20
		E/W Movements			0.12			0.05
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.497**			**0.347**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 9
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	36		0.02	20		0.01
NBT	1	1600	209		0.13	133		0.08
NBR	1	1600	33		0.02	9		0.01
SBL	1	1600	54		0.03	17		0.01
SBT	0.5	800	175	197	0.12	105	125	0.08
SBR	0.5	800	22			20		
EBL	1	1600	34		0.02	18		0.01
EBT	0.5	800	153	189	0.12	55	66	0.04
EBR	0.5	800	36			11		
WBL	1	1600	11		0.01	8		0.01
WBT	0.5	800	79	136	0.09	86	105	0.07
WBR	0.5	800	57			19		
		N/S Movements			0.16			0.09
		E/W Movements			0.12			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.389**			**0.271**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: **10**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	12		0.01	35		0.02
NBT	0.5	800	275	283	0.18	343	356	0.22
NBR	0.5	800	8			13		
SBL	1	1600	14		0.01	22		0.01
SBT	0.5	800	240	270	0.17	383	433	0.27
SBR	0.5	800	30			50		
EBL	1	1600	82		0.05	47		0.03
EBT	1	1600	116		0.07	28		0.02
EBR	1	1600	39			30		
WBL	1	1600	9		0.01	20		0.01
WBT	0.5	800	35	54	0.03	59	87	0.05
WBR	0.5	800	19			28		
		N/S Movements			0.19			0.29
		E/W Movements			0.09			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.371**			**0.476**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: 11
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	18		0.01	11		0.01
NBT	1	1600	111		0.07	111		0.07
NBR	1	1600	76		0.05	79		0.05
SBL	1	1600	385		0.24	199		0.12
SBT	0.5	800	83	84	0.05	39	43	0.03
SBR	0.5	800	1			4		
EBL	0.33	528	0			3		
EBT	0.33	528	200	214	0.13	90	106	0.07
EBR	0.33	528	14			10		
WBL	0.5	800	246			268		
WBT	0.5	800	82	574	0.36	139	434	0.27
WBR	1	1600	105			85		
		N/S Movements			0.31			0.19
		E/W Movements			0.36			0.27
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.769**			**0.565**
LEVEL OF SERVICE (LOS)					**C**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: **12**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	22		0.01	16		0.01
NBT	0.5	800	18	69	0.04	21	57	0.04
NBR	0.5	800	51			36		
SBL	1	1600	49		0.03	87		0.05
SBT	1	1600	17		0.01	25		0.02
SBR	1	1600	12		0.01	4		0.00
EBL	1	1600	4		0.00	7		0.00
EBT	1.5	2400	447	230	0.14	357	189	0.12
EBR	0.5	800	12			20		
WBL	1	1600	10		0.01	45		0.03
WBT	2	3200	205		0.06	502		0.16
WBR	1	1600	43		0.03	163		0.10
		N/S Movements			0.07			0.09
		E/W Movements			0.15			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.323**			**0.352**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: **13**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	108		0.07	275		0.17
NBT	1	1600	196		0.12	235		0.15
NBR	1	1600	124		0.08	41		0.03
SBL	1	1600	29		0.02	49		0.03
SBT	2	3200	219		0.07	325		0.10
SBR	1	1600	72		0.05	76		0.05
EBL	1	1600	40		0.03	88		0.06
EBT	2	3200	376		0.12	215		0.07
EBR	1	1600	223		0.14	191		0.12
WBL	1	1600	92		0.06	112		0.07
WBT	1.5	2400	150	94	0.06	384	240	0.15
WBR	0.5	800	37			96		
		N/S Movements			0.14			0.27
		E/W Movements			0.18			0.21
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.416**			**0.578**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: **14**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	79		0.05	54		0.03
NBT	1	1600	198		0.12	91		0.06
NBR	1	1600	142		0.09	53		0.03
SBL	1	1600	60		0.04	28		0.02
SBT	1	1600	177		0.11	119		0.07
SBR	1	1600	54		0.03	53		0.03
EBL	1	1600	85		0.05	45		0.03
EBT	1	1600	461		0.29	241		0.15
EBR	1	1600	91		0.06	51		0.03
WBL	1	1600	98		0.06	123		0.08
WBT	1	1600	216		0.14	475		0.30
WBR	1	1600	37		0.02	64		0.04
		N/S Movements			0.16			0.11
		E/W Movements			0.35			0.33
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.611**			**0.533**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions Without Project
INTERSECTION: **15**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	143		0.09
NBT	0.5	800	478	707	0.44	326	453	0.28
NBR	0.5	800	229			127		
SBL	1	1600	161		0.10	152		0.10
SBT	0.5	800	293	396	0.25	383	530	0.33
SBR	0.5	800	103			147		
EBL	1	1600	122		0.08	120		0.08
EBT	0.5	800	794	899	0.56	509	586	0.37
EBR	0.5	800	105			77		
WBL	1	1600	127		0.08	168		0.11
WBT	0.5	800	412	532	0.33	859	1015	0.63
WBR	0.5	800	120			156		
		N/S Movements			0.54			0.42
		E/W Movements			0.64			0.71
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**1.284**			**1.229**
LEVEL OF SERVICE (LOS)					**F**			**F**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

Appendix E
Opening Year (2016) With Project ICU Output

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 1
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	91			49		
NBT	0.33	528	80	233	0.15	86	163	0.10
NBR	0.33	528	53			23		
SBL	0.5	800	16			11		
SBT	0.5	800	101	199	0.12	86	119	0.07
SBR	1	1600	80		0.05	21		0.01
EBL	1	1600	72		0.05	12		0.01
EBT	0.5	800	312	423	0.26	77	108	0.07
EBR	0.5	800	111			31		
WBL	0.33	528	20			28		
WBT	0.33	528	263	321	0.20	96	142	0.09
WBR	0.33	528	18			15		
		N/S Movements			0.15			0.10
		E/W Movements			0.26			0.10
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.510**			**0.299**
LEVEL OF SERVICE (LOS)					**A**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 2
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	81		0.05	74		0.05
NBT	1	1600	342		0.21	332		0.21
NBR	1	1600	77		0.05	56		0.04
SBL	1	1600	16		0.01	15		0.01
SBT	1	1600	279		0.17	393		0.25
SBR	1	1600	39		0.02	36		0.02
EBL	1	1600	41		0.03	17		0.01
EBT	0.5	800	186	256	0.16	57	105	0.07
EBR	0.5	800	70			48		
WBL	1	1600	61		0.04	67		0.04
WBT	0.5	800	114	125	0.08	67	81	0.05
WBR	0.5	800	11			14		
		N/S Movements			0.23			0.29
		E/W Movements			0.20			0.11
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.523**			**0.500**
LEVEL OF SERVICE (LOS)					**A**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 3
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	0.33	528	27			49		
NBT	0.33	528	344	428	0.27	228	355	0.22
NBR	0.33	528	30			29		
SBL	1	1600	133		0.08	47		0.03
SBT	0.5	800	372	385	0.24	247	280	0.18
SBR	0.5	800	13			33		
EBL	0.33	528	34			22		
EBT	0.33	528	188	306	0.19	122	198	0.12
EBR	0.33	528	50			32		
WBL	1	1600	33		0.02	19		0.01
WBT	1	1600	67		0.04	152		0.10
WBR	1	1600	189		0.12	71		0.04
		N/S Movements			0.35			0.25
		E/W Movements			0.21			0.14
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.663**			**0.487**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 4
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	22		0.01
NBT	0.5	800	238	280	0.18	113	134	0.08
NBR	0.5	800	42			21		
SBL	1	1600	103		0.06	20		0.01
SBT	1	1600	186		0.12	104		0.07
SBR	1	1600	16		0.01	19		0.01
EBL	1	1600	35		0.02	19		0.01
EBT	0.5	800	308	359	0.22	202	217	0.14
EBR	0.5	800	51			15		
WBL	1	1600	33		0.02	42		0.03
WBT	1	1600	202		0.13	243		0.15
WBR	1	1600	70		0.04	48		0.03
		N/S Movements			0.24			0.10
		E/W Movements			0.24			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.584**			**0.359**
LEVEL OF SERVICE (LOS)					**A**			**A**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 5
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	110		0.07	92		0.06
NBT	1	1600	417		0.26	303		0.19
NBR	1	1600	95		0.06	46		0.03
SBL	1	1600	76		0.05	60		0.04
SBT	1	1600	320		0.20	377		0.24
SBR	1	1600	46		0.03	83		0.05
EBL	1	1600	58		0.04	64		0.04
EBT	1	1600	256		0.16	118		0.07
EBR	1	1600	141		0.09	93		0.06
WBL	1	1600	44		0.03	64		0.04
WBT	1	1600	130		0.08	178		0.11
WBR	1	1600	60		0.04	101		0.06
		N/S Movements			0.31			0.29
		E/W Movements			0.19			0.15
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.596**			**0.544**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 6
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	33		0.02	29		0.02
NBT	0.5	800	404	461	0.29	325	362	0.23
NBR	0.5	800	57			37		
SBL	1	1600	193		0.12	90		0.06
SBT	1.5	2400	268	178	0.11	389	225	0.14
SBR	0.5	800	88			61		
EBL	1	1600	159		0.10	50		0.03
EBT	1	1600	477		0.30	249		0.16
EBR	1	1600	7		0.00	22		0.01
WBL	1	1600	22		0.01	96		0.06
WBT	1	1600	218		0.14	408		0.26
WBR	1	1600	113		0.07	93		0.06
		N/S Movements			0.41			0.28
		E/W Movements			0.31			0.29
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.821**			**0.669**
LEVEL OF SERVICE (LOS)					**D**			**B**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 7
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	3		0.00	8		0.01
NBT	1	1600	389		0.24	420		0.26
NBR	1	1600	47		0.03	21		0.01
SBL	1	1600	105		0.07	53		0.03
SBT	1	1600	268		0.17	489		0.31
SBR	1	1600	46		0.03	19		0.01
EBL	0.33	528	44			3		
EBT	0.33	528	69	127	0.08	6	24	0.02
EBR	0.33	528	10			15		
WBL	0.33	528	53			12		
WBT	0.33	528	37	238	0.15	5	43	0.03
WBR	0.33	528	143			25		
		N/S Movements			0.31			0.31
		E/W Movements			0.149			0.03
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.558**			**0.438**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: **8**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	71		0.04	74		0.05
NBT	1.5	2400	274	140	0.09	301	156	0.10
NBR	0.5	800	6			11		
SBL	1	1600	60		0.04	24		0.02
SBT	0.5	800	361	374	0.23	222	246	0.15
SBR	0.5	800	13			24		
EBL	0.33	528	10			14		
EBT	0.33	528	83	191	0.12	26	78	0.05
EBR	0.33	528	97			37		
WBL	0.5	800	4			0		
WBT	0.5	800	49	53	0.03	39	39	0.02
WBR	1	1600	62		0.04	23		0.01
		N/S Movements			0.28			0.20
		E/W Movements			0.12			0.05
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.497**			**0.349**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 9
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	36		0.02	20		0.01
NBT	1	1600	209		0.13	133		0.08
NBR	1	1600	33		0.02	9		0.01
SBL	1	1600	54		0.03	17		0.01
SBT	0.5	800	175	197	0.12	105	125	0.08
SBR	0.5	800	22			20		
EBL	1	1600	34		0.02	18		0.01
EBT	0.5	800	154	190	0.12	59	70	0.04
EBR	0.5	800	36			11		
WBL	1	1600	11		0.01	8		0.01
WBT	0.5	800	79	136	0.09	91	110	0.07
WBR	0.5	800	57			19		
		N/S Movements			0.16			0.09
		E/W Movements			0.13			0.08
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.390**			**0.274**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: **10**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	12		0.01	35		0.02
NBT	0.5	800	280	288	0.18	363	376	0.24
NBR	0.5	800	8			13		
SBL	1	1600	14		0.01	22		0.01
SBT	0.5	800	242	272	0.17	404	459	0.29
SBR	0.5	800	30			55		
EBL	1	1600	83		0.05	51		0.03
EBT	1	1600	116		0.07	28		0.02
EBR	1	1600	39			30		
WBL	1	1600	9		0.01	20		0.01
WBT	0.5	800	35	54	0.03	59	87	0.05
WBR	0.5	800	19			28		
		N/S Movements			0.19			0.31
		E/W Movements			0.09			0.09
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.375**			**0.495**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: **11**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	18		0.01	11		0.01
NBT	1	1600	111		0.07	111		0.07
NBR	1	1600	76		0.05	79		0.05
SBL	1	1600	385		0.24	199		0.12
SBT	0.5	800	83	84	0.05	39	43	0.03
SBR	0.5	800	1			4		
EBL	0.33	528	0			3		
EBT	0.33	528	201	215	0.13	94	110	0.07
EBR	0.33	528	14			10		
WBL	0.5	800	246			268		
WBT	0.5	800	82	574	0.36	144	439	0.27
WBR	1	1600	105			85		
		N/S Movements			0.31			0.19
		E/W Movements			0.36			0.27
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.769**			**0.568**
LEVEL OF SERVICE (LOS)					**C**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 12
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	22		0.01	16		0.01
NBT	0.5	800	18	70	0.04	21	59	0.04
NBR	0.5	800	52			38		
SBL	1	1600	49		0.03	87		0.05
SBT	1	1600	17		0.01	25		0.02
SBR	1	1600	12		0.01	4		0.00
EBL	1	1600	4		0.00	7		0.00
EBT	1.5	2400	448	230	0.14	361	191	0.12
EBR	0.5	800	12			20		
WBL	1	1600	10		0.01	47		0.03
WBT	2	3200	205		0.06	507		0.16
WBR	1	1600	43		0.03	163		0.10
		N/S Movements			0.07			0.09
		E/W Movements			0.15			0.16
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.325**			**0.354**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: **13**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	108		0.07	275		0.17
NBT	1	1600	197		0.12	242		0.15
NBR	1	1600	124		0.08	41		0.03
SBL	1	1600	30		0.02	56		0.04
SBT	2	3200	220		0.07	332		0.10
SBR	1	1600	73		0.05	83		0.05
EBL	1	1600	42		0.03	94		0.06
EBT	2	3200	376		0.12	215		0.07
EBR	1	1600	223		0.14	191		0.12
WBL	1	1600	92		0.06	112		0.07
WBT	1.5	2400	150	95	0.06	384	244	0.15
WBR	0.5	800	39			103		
		N/S Movements			0.14			0.28
		E/W Movements			0.18			0.21
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.417**			**0.586**
LEVEL OF SERVICE (LOS)					**A**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: **14**
Analysis Date: **9/17/2014**

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	80		0.05	59		0.04
NBT	1	1600	198		0.12	91		0.06
NBR	1	1600	142		0.09	53		0.03
SBL	1	1600	60		0.04	28		0.02
SBT	1	1600	177		0.11	119		0.07
SBR	1	1600	54		0.03	53		0.03
EBL	1	1600	85		0.05	45		0.03
EBT	1	1600	461		0.29	243		0.15
EBR	1	1600	91		0.06	56		0.04
WBL	1	1600	98		0.06	123		0.08
WBT	1	1600	217		0.14	477		0.30
WBR	1	1600	37		0.02	64		0.04
		N/S Movements			0.16			0.11
		E/W Movements			0.35			0.33
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**0.611**			**0.538**
LEVEL OF SERVICE (LOS)					**B**			**A**

ICU			LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F

INTERSECTION CAPACITY UTILIZATION
CALCULATION WORKSHEET

PROJECT: Quartz Hill Library
ANALYSIS CONDITION: Future (2016) Conditions With Project
INTERSECTION: 15
Analysis Date: 9/17/2014

			AM PEAK HOUR			PM PEAK HOUR		
MOVEMENT	**LANES**	**CAPACITY**	**VOLUME**	**ADJ VOL**	**ADJ V/C**	**VOLUME**	**ADJ VOL**	**ADJ V/C**
NBL	1	1600	65		0.04	143		0.09
NBT	0.5	800	478	707	0.44	326	453	0.28
NBR	0.5	800	229			127		
SBL	1	1600	161		0.10	152		0.10
SBT	0.5	800	293	396	0.25	383	530	0.33
SBR	0.5	800	103			147		
EBL	1	1600	122		0.08	120		0.08
EBT	0.5	800	794	899	0.56	511	588	0.37
EBR	0.5	800	105			77		
WBL	1	1600	127		0.08	168		0.11
WBT	0.5	800	413	533	0.33	861	1017	0.64
WBR	0.5	800	120			156		
		N/S Movements			0.54			0.42
		E/W Movements			0.64			0.71
		Rt. Turn Component			0.00			0.00
		Yellow Clearance			0.10			0.10
TOTAL CAPACITY UTILIZATION					**1.284**			**1.231**
LEVEL OF SERVICE (LOS)					**F**			**F**

	ICU		LOS
0.10	-	0.60	A
0.61	-	0.70	B
0.71	-	0.80	C
0.81	-	0.90	D
0.91	-	1.00	E
1.01	-	UP	F